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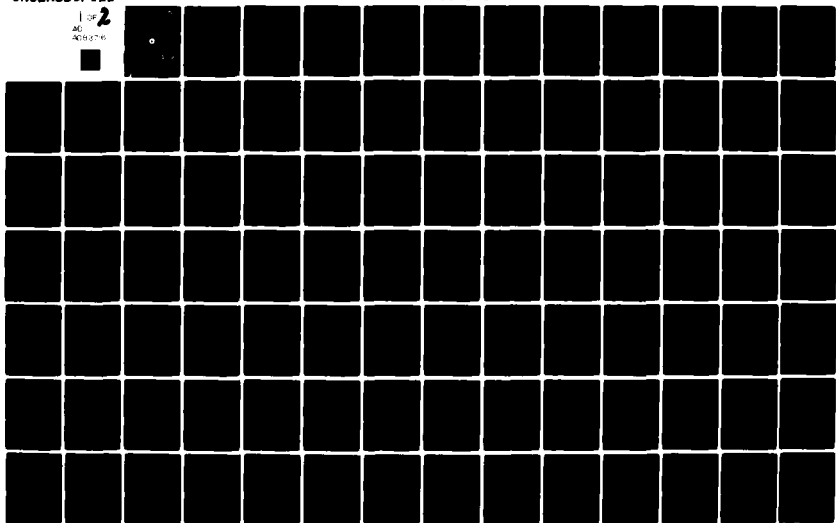
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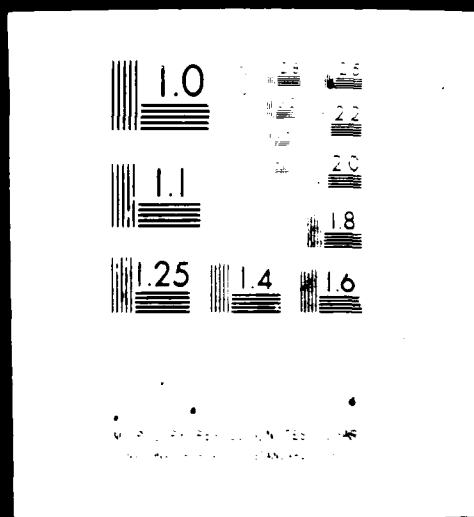


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REQUIREMENTS FOR INFORMATION/EDUCATION PROGRAMS
ON HYPOTHERMIA



FINAL REPORT

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REQUIREMENTS FOR
INFORMATION/EDUCATION
PROGRAMS ON HYPOTHERMIA

FINAL REPORT

by

Margaret C. Pridgen and
R. Michael Harnett

October 23, 1979

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16. Abstract This report describes requirements for three information/education programs aimed at recreational boaters, commercial seamen (merchant mariners and commercial fishermen) and Coast Guard personnel. The requirements specify program content and recommend modes of delivery for programs intended to reduce the occurrence of hypothermia-related fatalities by improving: 1. hazard recognition, 2. knowledge of self-aid techniques, 3. knowledge of first-aid procedures, and 4. knowledge of self-aid methods. Modular programs are defined which offer flexibility for implementation consistent with budgetary considerations.		
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PREFACE

This report documents work conducted under Task Number 4 of Contract Number DOT-CG-72074-A from December 1, 1978 to August 27, 1979. The work was performed at Clemson University under the auspices of the U.S. Coast Guard with LTJg Steven F. Wiker and Ens. John A. Budde serving as program technical monitors. The contract principal investigator was Dr. R. Michael Harnett. The leader of the work addressed in this report was Margaret C. Pridgen.

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REQUIREMENTS FOR INFORMATION/EDUCATION PROGRAMS

ON HYPOTHERMIA

For

**UNITED STATES COAST GUARD
U. S. Coast Guard Headquarters
Contract No. DOT-CG-72074-A
Task Number 4**

Final Report

From

Clemson University

by

Margaret C. Pridgen and R. Michael Harnett, Ph.D.

October 23, 1979

1.0 INTRODUCTION

1.1 Background

Cold has been shown to be a major contributing factor in hundreds of water-related fatalities each year. Harnett and Bijlani (1) reviewed Coast Guard Boating Accident Reports (BARs) for a typical year, 1974, and established an elaborate scheme for classifying the causes of death in fatal accidents. Cold was found to be the probable cause or a contributing factor in an estimated 16 percent of the recreational boating deaths

(197 of 1,254 classifiable fatalities). Although the same specific type of review could not be found for commercial casualties, Ecker (2) nevertheless suggests a strong relationship between the cold and commercial fishing deaths during the years 1972 to 1977.

Reducing the number of cold-related deaths is the ultimate goal of a four-part research project at Clemson University to study immersion hypothermia. This report is about one effort under that study, the development of requirements for a public information and communications program to transfer useful information gained through the research to populations at risk from hypothermia.

1.2 Objectives

The specific objectives of the present effort are to develop requirements for an effective program (or programs) to educate Coast Guard personnel, commercial and recreational boaters in four areas: (1) hypothermia hazard recognition, (2) self protection, (3) self treatment and (4) first-aid treatment of hypothermia victims. These requirements are to specify the content of programs for Coast Guard personnel, commercial and recreational boaters, and also to recommend modes of delivery for the information. Particular attention is placed on the "high risk" population of recreational boaters identified in reference 1.

1.3 Scope

For several reasons that will be discussed in Chapters 2 and 3 of this report, it is clear that one program will not reach both the commercial and recreational audiences identified in the objectives. Although cold is obviously a safety problem for both commercial seamen and recreational boaters, the way one should approach these two groups with informational programs may be very different. The message may be similar -- indeed, there will be many areas of overlap -- but the way it is packaged and delivered must be tailored to fit the audience. For these reasons, three essentially separate public information/education plans are outlined in this report.

The effort follows a basic model for designing a public information or communications strategy proposed by Larbinger (3). It states the objectives, then analyzes the audience for each program. Program content, or "message"

is determined for each audience, and all of these factors influence the choice of media, or modes of delivery, for the message.

This report, then, outlines the objectives, the audiences and the broad framework for implementing separate communications strategies for the recreational, commercial and Coast Guard sectors of the audience, but stops short of actually producing any communications tools, messages or products for specific media.

2.0 POPULATIONS AT RISK

2.1 Recreational Sector

There are an estimated 30 million people and almost 13 million vessels in the United States engaged in what is known as recreational or pleasure boating. (4) These people range from the low-income worker who fishes from a 12-foot johnboat to the wealthy owner of a 65-foot yacht. A full discussion of the demographic characteristics of the boating sector important in the design of a public information program is presented in Chapter 4 of this report under "Audience Analysis."

Harnett and Bijlani (1) have given a profile of that segment of the boating population which the hypothermia education effort specifically should address. Based on their analysis of cold-related fatalities, the "typical" victim is:

- male (more than 90 percent are)
- probably young (more than 50 percent were between 15 and 35 years)
- a swimmer, but does not use flotation assistance (55 percent of the victims were in that category)
- a resident of the New England, Mid-Atlantic, Great Lakes, deep South or West Coast region
- a sportsman (43 percent were boating in connection with a fishing trip, 10 percent were hunting; however, almost half were boating for its own sake)
- boating on fresh or tidal waters (3.6% Great Lakes, 18.3% tidal waters, and 66% non-tidal waters)

Further, fatal accidents in which cold water is a factor are likely to occur during the spring. Fifty percent of the cold-related deaths in 1974 happened during the four months between March and June, presumably because of "the high level of outdoor recreation accompanying the return of warmer weather at a time when the temperatures of most bodies of water are near their annual minimum."

They conclude that these characteristics of the high-risk population "may enable efforts aimed at reducing cold-related fatalities to be most fruitfully directed."

2.2 Commercial Sector

Comparable data on the specific influence of cold on commercial sector fatalities have not been found. However, any deaths related to cold water would certainly be included in statistics on commercial fatalities as a whole, therefore an analysis of these figures is revealing.

An average of 211 deaths a year occur as a result of commercial vessel casualties or accidents (5) (Table 1). Another 328 fatalities occur each year on board commercial ships but do not involve a vessel casualty; however, of these 40 percent (131 per year) are attributed to natural causes (Table 2). Almost 30 percent are caused by "falls from vessel into water" (man overboard). Most of these list drowning as the immediate cause of death. This category, involving almost 100 deaths per year, is the one most likely to involve cold water as a mechanism of death in fatalities not associated with vessel accidents.

There are therefore just over 300 commercial fatalities per year in which cold water could be a contributing factor or the direct cause of death. Of the 210 deaths due to vessel casualties, 85 percent involved uninspected vessels (35 percent were fishing vessels) and 15 percent involved inspected vessels. Of the 97 "man overboard" deaths, 77 percent were on uninspected vessels and 23 percent were on inspected vessels.

About 75 percent of the individuals killed in both categories held no Coast Guard license or documentation.

Fiscal year 1978 was the first year in which statistics were included on the geographic distribution of vessel casualty fatalities. Of the 179 deaths that year, 123 occurred in inland waters. Another 21 were in ocean waters, 16 in Western rivers, 16 in foreign or unspecified waters and three in the Great Lakes.

Ecker (2) analyzed fishing vessel casualties and gave more information on geographic distribution and indicates a strong link between harsh environmental conditions (including cold water) and deaths in the commercial sector. Between 1972 and 1977 he found that one category of accidents -- flooding, foundering and capsizing -- accounted for 238 deaths compared to 176 for the five other categories combined. In this high-risk category, environmental and weather factors were more of an influence than in most categories. Deaths from flooding, foundering and capsizing were concentrated

TABLE 2
DEATHS ON COMMERCIAL VESSELS NOT INVOLVING A VESSEL CASUALTY

	FY	1974	1975	1976	1977	1978	ANNUAL AVERAGE
<u>Classifications:</u>							
1. Natural causes (40 percent)		108	144	172	114	118	131.2
* 2. Falls from vessel into water (29%)		98	113	97	77	98	96.6
3. Struck by objects (6%)		17	15	25	14	34	21
** 4. Exposure and asphyxiation (4%)		14	11	13	11	15	12.8
** 5. Disappearance (3%)		9	0	16	13	3	8.2
** 6. Unknown or insufficient information (2%)		5	8	4	1	10	5.6
7. All others combined (homicide, suicide, slips & falls, electrical, machinery operation, caught in lines, exertion, altercations, etc.) -- 16%		45	57	78	42	41	52.6
TOTAL		296	348	405	272	319	328

* category probably includes most deaths related to cold water

** categories may include some cold-related deaths

In northern locations where cooler sea water temperatures prevail. The survival probabilities appear to have a close, if not direct, correlation to casualty latitude' (2).

In total fishing casualties, Alaska led all categories in both number of lives lost and number of vessels lost (Table 3), "testifying to the harshness of the operating environment and the low probability of personnel survival following vessel failure." Although the Gulf coast of Texas ranked second in total number of vessels lost with 108, the cooler waters of the Chesapeake Bay were second in total lives lost. The cold Pacific Northwest (Oregon and Washington) was third in loss of both vessels and lives.

Only 43 percent of the reports on fishing vessel deaths had enough information to determine the type of fishing activity the vessel was engaged in. Of those that could be determined, shrimping (which accounts for one-third of the 25,000 documented U.S. flag fishing vessels) ranked highest in number of fatal accidents. Shrimping was followed by ground fishing and salmon fishing. Ground fishing for cod, haddock and other species is primarily concentrated in New England; the major salmon fishery in the Pacific Northwest and Alaska.

The profile of a hypothetical cold-related victim in the commercial sector therefore might be: an unlicensed, undocumented crewmember on an uninspected vessel, engaged in deck duties at the time of his fatal accident. He probably works on a vessel fishing for shrimp, ground fish or salmon in Alaska, the Chesapeake Bay, the Pacific Northwest, or in the North Atlantic off New England; or on an uninspected tug or tow boat on inland rivers and harbors.

2.3 Coast Guard Personnel

The Coast Guard personnel sector is obviously the most highly structured one in the overall population at risk being addressed in this study. Since it is a military service, its personnel are organized into a well-defined hierarchical system with a well-established chain of command. Involvement with the system is voluntary. However, when an individual joins the system he overtly agrees to conform with the requirements imposed upon him by the organization.

TABLE 3
TOP TEN U.S. GEOGRAPHIC REGIONS IN NUMBER OF LIVES LOST AND
NUMBER OF VESSELS LOST IN COMMERCIAL FISHING ACCIDENTS, 1972-1977

Lives Lost		Region		Vessels Lost	
<u>Rank</u>	<u>Number</u>			<u>Rank</u>	<u>Number</u>
1	66	Alaska		1	171
2	30	Chesapeake Bay		12	26
3	28	Pacific Northwest (Washington & Oregon)		3	98
4	23	Northern California		5	60
5	17	Maine		17	12
6	16	Massachusetts		6	44
7	13	Texas (Gulf Coast)		2	108
7	13	Florida (East Coast)		8	41
9	12	Florida (West Coast)		6	44
10	11	Connecticut, N.Y., New Jersey		10	30
11	10	Southern California		4	81

Source: Ecker (2)

These requirements are of many types and include the performance of assigned duties and participation in required training, such as general military training, operational training (e.g., aviation transition training) and on-the-job training. In addition, advancement within the organization (particularly for enlisted men) requires that minimum knowledge and abilities must be acquired. The minimum standards are of two types: military standards and occupational standards. Military standards are required for advancement to specific pay grades. Occupational standards are required for advancement within a rating (occupational specialty).

The general nature of the Coast Guard personnel sector is better known if not less variable than the commercial and recreational sectors. The distribution of Coast Guard personnel in each of the three major categories of personnel, as of April 30, 1979, is as follows.

	<u>Number</u>	<u>Percent</u>
Commissioned Officers	4,750	12.9
Warrant Officers	1,353	3.7
Enlisted Men	<u>30,768</u>	<u>83.4</u>
Total	36,871	100

It is clear that the major problem to be solved is the education of enlisted men in the various aspects of hypothermia (hazard recognition, self-protection and treatment). It is also clear that the emphasis on formalized introductory training and recurring evaluations in the process of rating advancement present excellent opportunities to teach the desired information to incoming enlisted personnel and to assure its retention throughout their career.

3.0 PROGRAM STRUCTURE

The general objectives of a proposed hypothermia education effort - to get people to adopt new ideas about cold water and new safety and first-aid practices - have been stated. The populations at risk (the audience for the program) have been broadly identified. The next step is to decide on the broad structure of a program. Is a single program sufficient to reach all populations, or does the nature of the audience demand more than one approach?

3.1 Audience Factors Which Influence Program Structure

For the purposes of a cold water safety education effort, several factors stand out as distinguishing the recreational sector from the other sectors of the "at risk population."

Recreational Versus Occupational Activity

Pleasure boaters are on the water because they want to be; commercial men, by definition, are there because they have to be to do their job.

Given the proper appreciation for cold water as a hazard, the recreational boater could choose not to go boating on potentially hazardous days. In fact, this is one simple behavior that might be encouraged through the proposed program: not boating under hazardous conditions.

The professional seaman, whether he be a Coast Guard crewman, merchant seaman or commercial fisherman, does not have this simple option. His job calls for him to be on the water, at times, when water temperatures are extremely low and dangerous. In general, he will be afloat more often under adverse environmental conditions than the recreational boater.

Just instilling in him an appreciation of the hazard is not enough; he probably already has that. His safety hinges on a more complex set of choices and behaviors.

Group Size and Structure

A quick survey of the number of recreational boaters involved reveals that recreational boaters are such a large, amorphous group that some kind

of indirect, mass-media methods must be employed to reach them. There are between 30 and 50 million of them, and they are not concentrated around identifiable port areas. They go boating on salt water, fresh water lakes and isolated farm ponds throughout the "high risk" states.

The commercial sector, on the other hand, is smaller and has more sets of "common denominators". They are at least linked by occupation, and in some cases by union membership, affiliation with one of numerous associations, and common licensing or documentation requirements.

Coast Guard personnel form a highly-structured, hierarchical group with a well-established chain of command, formalized training programs and a system of advancement requiring demonstration of acquired skills and knowledge.

Equipment Differences

The protective equipment choices considered by recreational boaters and commercial seamen will be different, too. The gear which commercial men could choose to protect themselves in their relatively more hazardous environment may be more expensive, more cumbersome and harder to don than the pleasure boater's equipment. With certain types of equipment the professional seaman will need "hands on" practice in how to use the equipment.

3.2 Relevant Research in Communications

Read (6) indicates that sociologists studying the adoption of new farming techniques have found that people go through five steps before adopting a new idea or practice:

1. Awareness -- simply possessing the information that a new theory or technique exists.
2. Interest -- In which the individual relates his new awareness to his situation and needs. Interest leads the individual to seek more information.
3. Evaluation -- factors like cost and effort are weighed against the perceived value of the new practice, leading one to a mental evaluation.
4. Trial -- In which the mental evaluation is tested against actual experience.
5. Adoption -- a successful trial leads one to adopt the new practice.

Depending on the complexity of the new idea or practice, an individual can move from awareness to adoption in a few hours, or it may take years. Some people will skip steps and some will get derailed by a bad experience, faulty information or their own prejudices and never arrive at the adoption stage. Robertson (7) in discussing "The Great Seat Belt Campaign Flop," said: "The history of public health suggests that attempts to control human beings by changing everyone's behavior are never completely successful. Even when the behavior is required by law or administrative directive, such as immunization to enter school, compliance seldom exceeds 80 percent ... Changing behaviors which involve frequent attention and inconvenience, such as seat belt use {and, presumably, the use of personal flotation devices}, is especially difficult."

That does not mean all recreational and commercial seamen will be resistant to new information and safety practices. But in general, the more complex or expensive the practice, the longer it takes to move from awareness to adoption (6). Adopting a change in materials is the least complex practice. A relevant example of such a change would be the recreational boater who already uses a PFD changing to one that offers him more cold water protection.

A change in practice is more complex. It involves changing habits as well as materials. To move a boater from the category of non-PFD-user to PFD-user is more difficult than getting him to switch PFD types. The problem is magnified still further with the commercial population whose habits, safe and unsafe, are more thoroughly ingrained. Gardner (8), in discussing industrial safety training says of any workplace environment, "patterns which have become rigidly set through years of practice are highly resistant to revision." For example, a professional seaman (whether he is a fisherman or merchant mariner) who has become through years of repetition accustomed to doing a certain on-deck job in ordinary work clothes will find it hard to adjust to wearing a flotation jacket. If he needs to wear such protective equipment, he may need practice doing his familiar job in a familiar setting before he will adopt the new gear.

Beyond just an awareness of the need to change habits, Gardner says a worker needs "persistent and prolonged help if he is to modify his acts of skill so as to build safety into them. An employee's insight into the need for change and his willingness to change do not necessarily mean

that the change will be accomplished efficiently or successfully."

3.3 Discussion of Multiple Program Approach

The question was asked in the introductory section of this chapter, "Is a single program sufficient to reach both recreational and commercial sectors of the at-risk population?" The answer is, obviously, no.

To reach a meaningful percentage of the millions of pleasure boaters at risk requires at least some use of indirect, impersonal channels in addition to direct person-to-person contact with boaters. On the other hand, there are fewer individuals in the commercial population and they will be called on to make more complex decisions and behavioral adaptations in the interests of cold water safety. These kinds of decisions require channels that provide feedback so questions can be answered, language clarified and instructions repeated (6).

For these reasons, a Coast Guard effort to improve cold water safety should proceed along three essentially separate program lines. The programs aimed at the recreational and commercial sectors would be centrally-directed "grass-roots" campaigns utilizing Coast Guard personnel and volunteers in an effort to get maximum results with minimum outlay of federal dollars. The first campaign would ultimately reach the individual boater through indirect channels chosen from a mix of tools like newspapers, magazines, radio, television, leaflets, pamphlets, posters, etc. Another, directed at the commercial sector, would primarily employ personal-contact tools like workshops, exhibits, demonstrations, in-service training, etc. with secondary employment of news coverage of these programs in the specialized trade media. A third makes use of in-place programs for training and evaluating Coast Guard personnel.

With this broad structure in mind, specific modes of delivery are recommended in Chapters 4, 5 and 6 of this report.

4.0 PROGRAM FOR RECREATIONAL SECTOR

4.1 Objectives

The specific objectives of the public information program for recreational boaters should be:

1. to increase the boater's knowledge about cold water hazards; to help him recognize and appreciate hazardous conditions.
2. to teach the boater methods of self-protection against cold water hazards; to encourage him to adopt safer boating practices with regard to cold-water protection.
3. to inform boaters about self-treatment and first-aid for hypothermia.

4.2 Audience Analysis

In order to target a public information effort as accurately as possible, it is important to know as much as you can about the audience. Harnett and Bijlani (1) have provided a look at that segment of the boating population most likely to be involved in a cold-related fatal accident (see discussion in Section 2.1). In many respects -- age and experience of boat operator, for example -- the high-risk victim is very representative of boating fatalities as a whole.

The Nationwide Boating Surveys of 1973 and 1976 (4) furnish additional demographic data which help characterize recreational boaters. The most recent survey places the total number of boating households in the U.S. at 14.9 million, and estimates an average of two boat operators per household. There are therefore at least 30 million recreational boaters in this country, and other recent estimates have placed the number as high as 50 million.

About 70 percent of boat operators are men. Couple this with Harnett and Bijlani's finding that more than 90 percent of cold-related fatalities are males and one must conclude that the proposed education effort be strongly oriented toward a male audience.

The boating survey reveals that boaters are better educated than

the average American. While census data show 11.6 percent of the American adult population has less than an 8th grade education, only 2.3 percent of primary boat operators are in that category, as indicated in Table 4. On the other end of the spectrum, 28.4 percent of boaters have finished or gone beyond college, compared with only 13.9 percent in the general population. Altogether, only 6.2 percent of boaters have never had any secondary schooling, therefore, boating information materials can be geared to a slightly higher reading and comprehension level than information aimed at a general audience. It would not be out of line to assume at least an average 10th grade reading level for boaters.

In occupational classification, boaters are again a little "above" the average. Although the percentages for the broad categories "White Collar," "Blue Collar" and "Farm Worker" do not reflect large differences between boaters and the general population, the more detailed breakdowns are revealing. As shown in Table 5, white-collar workers make up 52.8 percent of employed adults who are primary boat operators, and 49.8 percent of the employed adult population as reflected in the census data. However, 26 percent of the boaters are professional or technical workers, whereas only 15.1 percent of the general public falls in that category. Furthermore, 17.5 percent of boaters are managers or administrators versus only 10.5 percent of the total population. The white-collar public closes the gap on boaters in the category "clerical or kindred worker," who will be primarily women employees. There, boaters account for only 2.5 percent compared with 17.8 percent in the general work force. These white-collar statistics therefore provide further evidence that boating -- at least boat driving or operating -- is primarily a masculine endeavor in this country.

The 1976 boating survey also revealed that almost all boating households -- 98.5 percent -- engage in more than one recreational activity, as shown in Table 6. More than 88 percent of boaters fish at least on occasion, and 50 percent are hunters. This evidence, along with the conclusion of Harnett and Bijlani (1) that more than half of all cold-water fatalities occur to such outdoorsmen, strongly suggest that a major audience emphasis in the cold-water information efforts might be the hunter-fishermen sector of the recreational boating population.

TABLE 4
HIGHEST GRADE OR YEAR OF SCHOOL COMPLETED BY PRIMARY
OPERATORS OVER 25 YEARS OLD

<u>Grade/Year</u>	<u>Percent of Total</u>	
	<u>Boaters</u>	<u>Census data*</u>
Less than 8th grade	2.3	11.6
Completed 8th grade	3.9	10.3
Some High School	10.4	15.6
High School Graduate	31.3	36.2
Some Post-High School; no College Degree	23.7	12.7
College Graduate or College Graduate with Graduate Work	28.4	13.9
<hr/> TOTAL	<hr/> 100.0	<hr/> 100.0

* Percent of U. S. population over 25 years having completed these categories.

TABLE 5
OCCUPATION OF EMPLOYED PRIMARY BOAT OPERATORS
OVER 16 YEARS OLD

<u>Job/Occupation</u>	<u>Percent of Total</u>	
	<u>Boaters</u>	<u>Census Data *</u>
I. White-collar workers	52.8	49.8
Professional, technical	26.0	15.1
Manager or Administrator (except farm)	17.5	10.5
Sales Worker	6.8	6.4
Clerical or Kindred Worker	2.5	17.8
II. Blue-Collar Workers	36.2	33.0
Craftsman or Kindred Worker	16.7	12.9
Operator (except transport)	6.2	11.4
Operator of Transport Equipment	5.2	3.8
Laborer (except farm)	8.1	4.9
III. Farm Workers	4.6	3.4
Farmer or Farm Manager	2.8	1.9
Farm Laborer or Foreman	1.8	1.5
IV. Service Worker	6.4	13.8
<u>TOTAL †</u>	<u>100.0</u>	<u>100.0</u>

* Percent of U. S. population over 16 years old falling in these categories.

† Does not include Armed Services -- 197,000 and 'Other' -- 735,000; this was done for comparison purposes.

TABLE 6
KINDS OF RECREATION OTHER THAN BOATING

<u>Activities*</u>	<u>Households</u>		<u>Percent of Participants †</u>
	<u>Number</u>	<u>Percent</u>	
Did participate in other recreational activities	14,679	98.5	
Camping			69.0
Recreational fishing			88.4
Hunting			50.0
Athletic sports			71.4
Other outdoor recreation			68.0
Did not participate in other recreational activities	216	1.5	
<u>TOTAL</u>	<u>14,895</u>	<u>100.0</u>	

* Entries in thousands.

† One or more responses possible per household.

Audience Attitudes

A couple of other questions asked in the boating survey also bear on the design of a cold-water information plan. Boaters were asked, "What factors do you feel influence a person's decision to wear or not wear a PFD?" The largest percentage, 34.6 percent, think swimming ability is the most important factor. More than one out of three boaters, then, apparently think it's safe not to wear a PFD if one can swim. But Harnett and Bijlani (1) report that more than half of all fatal accidents related to cold water happen to people who can swim but who are not wearing flotation devices at the time of the accident. This is no doubt because cold water can severely restrict an accident victim's motor skills and swimming ability, rendering him a "de facto" non-swimmer in a matter of minutes. In view of the boating public's attitude toward the need -- or the lack of it -- for wearing PFDs, this point should be emphasized in a public information program aimed at recreational boaters.

Boaters were also asked if they had ever taken formal boating safety education courses. The percentage of those who had rose almost five percentage points from 1973 to 1976, but it is still a relatively low figure -- 31.3 percent. In other words, more than two out of three boaters on the water in 1976 had never taken a boating course of any kind. Furthermore, 50 percent said they were unwilling to spend any time at all in taking such a course. These figures indicate any public education effort involving only boating safety courses or other formal or semi-formal training will fall short of the desired mark.

In the same Nationwide Boating Surveys, however, more than 93 percent of the people questioned in both years reported they had seen or heard something about boating safety via some medium. Television was named most frequently, by 83.8 percent in 1976, as one medium of boating safety information. Magazines were mentioned 69 percent of the time, posters or pamphlets 56 percent, and so on as shown in Table 7. Less than 7 percent said they never see or hear anything about boating safety.

Boaters' preferences in sources of boating information were surveyed by Wyle Laboratories (9) in 1978. In contrast to the boating survey, which asked respondents to name any and all sources of boating safety information, the Wyle survey asked them to give their primary or major source of information. Thirty-three percent claim to get most of their boating information

TABLE 7
DISSEMINATION OF BOATING SAFETY INFORMATION (1976)

<u>Household Responses</u>	<u>Number*</u>	<u>Percent</u>
Saw or heard something about boating safety:	13,894	93.3
on television	11,641	83.8
on the radio	6,757	48.6
in newspapers	7,699	55.4
in magazines	9,595	69.1
on posters or pamphlets	7,842	56.4
through marinas	5,926	42.6
through marine dealers	5,081	36.6
		} †
Did not see or hear anything about boating safety:	1,001	6.7
<hr/>	<hr/>	<hr/>
TOTAL	14,895	100.0

* Numbers in thousands

† Percents of those who saw or heard something, multiple responses possible.

from "informed people," meaning experienced friends, marina operators, boating equipment dealers, etc. This is roughly in line with the Nationwide Boating Survey finding that boaters get some information through marinas (34 percent in 1973, 42.6 percent in 1976) and through marine dealers (27.7 percent in 1973, 36.6 percent in 1976).

Another 24 percent of the Wyle sample listed boating media (special interest magazines, newspaper columns, etc.) as primary sources of boating information, and 19 percent said formal boating organizations like the Coast Guard Auxiliary, U.S. Power Squadron, etc. Only six percent listed mass media (newspaper, radio and television) as the source of most of their boating information.

With regard to the credibility of boating information sources, however, 61 percent of boaters in the Wyle survey said they would trust formal organizations in cases of conflicting information. This was followed by 24 percent who would trust informed people. While many people are exposed to boating safety information via mass media, only three percent of boaters would be most likely to trust radio and television in cases of conflicting boating information. All in all, "formal organizations were by far the most often chosen as being credible and desirable" sources of boating information. (9)

These audience attitude surveys would seem to indicate two things:

1. The campaign should not begin with mass media communications tools. All pertinent information on hypothermia and cold-water survival should be thoroughly integrated into official materials of the U. S. Coast Guard, state boating agencies and other groups before a broad public campaign begins, since boaters will be more likely to trust these official sources in cases of conflicting information.
2. The Coast Guard should be identified as the ultimate source and authority for all information delivered to recreational boaters through the education effort.

To summarize, there is enough demographic evidence available that advertisers might classify boaters as a generally "upscale" audience. They are slightly better educated and no doubt have more disposable income than the average American. They read a little more -- many even subscribe to special-interest periodicals on boating, fishing or hunting -- and

would be able to understand slightly more complex written material than the average reader.

However, since half of all boaters say they are unwilling to spend any time in a boating safety course and nearly 70 percent have never participated in one, many boaters seem to prefer an easier route to acquiring new information. If they want to know about new equipment or boating procedures and regulations, they are more apt to ask a friend or someone who works with boats and equipment.

Reaching this casual two-thirds of the boating population through the network of "informed people" is a potentially challenging task for the Coast Guard.

4.3 Program Content

The purpose of this section is to describe the major informational items which should be part of the information/education program directed toward recreational boaters. This content material is presented in the form of indented lists. A separate list is given for the material relating to each of the following major content areas.

1. Hazard recognition
2. Self protection
3. First aid
4. Self treatment

The major points of content relating to hazard recognition are shown in Figure 1. This material draws on the basic knowledge of the lethal mechanisms which may be elicited through cold immersion. It seeks to present a rational explanation for the variability in cold-immersion survival-time estimates that one hears from various sources. The objectives are to establish credibility by exhibiting a command of the material and to communicate the significance of the hazard presented by accidental immersion in cold water. The results of the demographic analysis by Harnett and Bijlani (1) are also drawn upon to make the important point that while winter boating is obviously hazardous, boating in the spring of the year may be extremely hazardous as well.

The content material relating to self protection is presented in Figure 2. The basic philosophy of this material is that self protection begins on the shore and extends into the water when needed. Self protection begins

FIGURE 1
HAZARD-RECOGNITION CONTENT FOR
RECREATIONAL BOATERS

1. Cold can kill 3 ways:
 - a. The shock of sudden immersion in very cold water may be lethal and may cause immediate drowning due to loss of control of breathing.
 - b. Cold can reduce physical strength and flexibility rendering one unable to swim or save himself.
 - c. Lethal reduction in body temperature -- hypothermia
 - In 60°F water you could be dead in 2 hours
 - In 50°F water you could be dead in 1 hour
 - In 40°F water you could be dead in 20 minutes
2. Boating on cold water without protection from accidental immersion is risky.
3. The temperatures of most bodies of water are near their coldest levels in the Spring after the weather has warmed and boating activity has increased.
4. Clothing which will protect against cold and wet weather may be of little value when immersed in cold water.

FIGURE 2
SELF-PROTECTION CONTENT FOR
RECREATIONAL BOATERS

1. When boating on cold water, be prepared to survive in it. Unpredictable factors (e.g., weather and equipment malfunctions) may make your life depend upon this preparation.
2. Cold exposure impairs swimming ability, a personal flotation device is essential protection during cold immersion.
3. Snugly-fitted vest-type PFD's with smooth inner surfaces (as opposed to corrugated surfaces) can extend the survival time of an average man in cold water by nearly 60 percent as compared to kapok, key hole-type PFD's.
4. Specially-designed jacket-type equipment is available to provide flotation and to protect against cold immersion. Extensions in survival time for an average man of from 20 to 145 percent, as compared to snug, vest-type PFD's, may be achieved. Even greater extensions are afforded thin individuals.
5. With many hypothermia protection devices, fit is extremely important (most should be comfortably snug)-- Try before you buy.
6. Cold impairs swimming ability and swimming shortens survival time -- swim for shore only when confident you can make it.
7. Get out of the water if possible. If not, then get as far out as you can, e.g. on a capsized boat.
8. The HELP (heat escape lessening position) can significantly prolong survival.
9. A group of immersion victims should huddle tightly in a ring. Any children present should be placed inside.
10. If not wearing an approved Type I or Type II PFD, make provisions to keep your mouth out of the water if you should become unconscious; e.g. tie yourself to a tree top, capsized boat, etc.
11. Make yourself as locatable as possible; use whistle, floating flag, display brightly colored materials, etc.

with the selection of equipment to be used on the water which will afford cold-protection in it. The first point made is that one may not ignore cold-immersion hazards simply because he does not plan to enter the water. Next, the need for flotation assistance is emphasized. The cold-protection benefit of snug, vest-type PFD's is described. Then the further merit of articles of equipment which are commercially available to recreational boaters is described. Finally several procedures which may be implemented during cold immersion are listed. These procedures are mentioned generically but are not described in detail. Before preparing materials for this program a decision would have to be made whether or not to describe these procedures in detail. They have received a nontrivial amount of publicity through pamphlets and boating publications. Pictures or drawings without lengthy narrative description should be considered to illustrate the techniques.

The first-aid content material for the recreational boating program is shown in Figure 3. The major points of the regimen are removal from cold exposure to preclude continued heat loss, removal of wet clothing, insulation from the environment, rewarming, CPR as needed and continuation of CPR until rewarming is accomplished.

The basis of the recommendation to remove wet clothing regardless of the environment is that most insulation which is likely to be available to a recreational boater rescuing a hypothermia victim is likely to absorb water from the clothing and lose most of its insulation effectiveness. This would be true of clothing, blankets and sleeping bags. Therefore, it is considered worth the additional exposure in a cold environment to achieve ultimate effective insulation from it. The basis of the recommendation to insulate the victim from a warm environment is that it should preclude the promotion of some afterdrop which otherwise would be stimulated. This was suggested by the relatively small afterdrops observed by Harnett, et al. (17) with spontaneous rewarming.

Different rewarming approaches are recommended for mild and severe hypothermia. These two types of hypothermia are distinguished not on the basis of core temperatures which probably could not be determined by a recreational boater, but by symptomology which can be readily interpreted by an untrained observer. The recommended rewarming protocols are conservative. Surface heating of the torso is recommended only for mild cases.

**FIGURE 3
FIRST-AID CONTENT FOR
RECREATIONAL BOATERS**

1. Remove victim from cold exposure if possible, minimizing his physical exertion and handling him gently.
2. Remove wet clothing and insulate him well from his environment (warm or cold) during transport.
3. If victim conscious and shivering -- rewarm by immersing body (torso only) in a tub of warm water (110°F) or by applying heat to the torso only in other ways (e.g. heating pads, hot towels, etc.).

If victim unconscious or not shivering -- support respiration and/or circulation by CPR as necessary. Because a cold body can survive with reduced circulation, minimize risk of damage to heart by using reduced CPR rates (half ?). Maintain maximum insulation between victim and his environment and transport to a hospital.

4. Continue resuscitation efforts until victim is rewarmed (rectal temperature above 95°F).

WARNING:

In severe hypothermia, the pulse may be very faint. External cardiac massage should not be applied if a pulse can be discerned even though it is faint.

The recommendation for severe cases is no heating at all. This is based upon recognition of the fact that recreational boaters would very rarely have the equipment needed to perform inhalation therapy. Furthermore, hot bath therapy is not regarded as a safe treatment for profoundly cold victims; and surface heating would promote afterdrop which these victims would probably ill afford, see Harnett, et al. (17). The recommendation includes maintenance of insulation from the environment and CPR as necessary at reduced rates. The mouth-to-mouth resuscitation component of CPR would effect a crude sort of inhalation therapy but the rates used for normo-thermic victims are probably not necessary or desirable in either lung ventilation or external cardiac massage. This research does not provide a basis for concluding what reduction in rates should be used. A warning is included to alert the rescuer that external cardiac massage is not desirable if any sort of pulse can be detected.

The content material relating to self treatment is presented in Figure 4. The content items are very simple and self-explanatory. The basis for eating is two-fold. First, the specific dynamic action of food will promote internal (stomach) thermogenesis. Second, food (particularly carbohydrates) will support the considerable demands for energy-providing materials resulting from the physical stresses of cold exposure.

4.4 Modes of Delivery

There is strong evidence that mass audience media like radio, television and newspapers should not be used heavily in a cold-water communications strategy, at least not in the earliest stages. First, boaters have said they do not get most of their boating information from these sources, and what information they do get they feel is not as reliable as information from official sources or "informed people" (9). Secondly, a review of the safety literature indicates that mass media tools, particularly the ubiquitous Public Service Announcement (PSA), may not be effective in transferring safety information to a mass audience or in persuading people to change behaviors for safety reasons.

The experience of communicators trying to convince the public to use automobile safety belts is relevant, since seat belt use is probably a comparable behavior in many ways to the use of personal flotation devices, one of the main safeguards against the effects of cold water immersion.

FIGURE 4
SELF-TREATMENT CONTENT FOR
RECREATIONAL BOATERS

1. Remove yourself from cold exposure, if possible.
2. Remove wet clothing and add insulative protection whether in a warm or cold environment.
3. If food is available, eat it (particularly carbohydrates and warm foods). Avoid alcohol.
4. Rewarm yourself by applying heat to your torso.

Robertson's 1970 study (7) of what amounted to a \$7 million media campaign revealed "no effect on belt use of the television campaign". He concludes: "Unless and until a rigorously designed study demonstrates otherwise, there is formidable evidence leading to the conclusion that mass media campaigns are ineffective means of increasing belt use." Fleischer's 1971 study (10) of the effectiveness of a radio/TV campaign on safety belt use in two California communities concludes: "It is clear that the broadcast media campaign, conducted via public service announcement (his emphasis), cannot be considered a markedly effective highway safety countermeasure."

Fleischer goes further to recommend that safety campaigns employ, where applicable, "seminars, presentations to public groups, in-plant safety programs, bumper stickers, ads in local newspapers, and the like. Primary support should come from voluntary agencies and local government. Federal funds should be used only as seed money for the development of media materials and to monitor the relative costs and effectiveness of the campaign over time."

Because of this need to use federal funds carefully and in a targeted manner and because the boating public depends on "official sources" in cases of conflicting information, it is important to integrate information on cold water survival into existing boating safety courses and other programs at the local level. This can be accomplished by disseminating the data first to an "elite" audience. This group should include officials in each Coast Guard district, Coast Guard Auxiliary personnel, state boating agencies, safety organizations like the Red Cross and National Safe Boating Council, Boy Scouts, Girl Scouts and Sea Grant marine recreation specialists in each state; and it could include marine insurers, and industry associations representing boating equipment manufacturers and dealers.

Methods for transferring information to an elite audience are well-known to the Coast Guard, because the agency does a good job of communicating with most of these groups already. They should, of course, include the presentation of Coast Guard-sponsored research findings at meetings such as the annual National Boating Education Seminars, meetings of the National Association of State Boating Law Administrators and others. A separate Coast Guard-sponsored conference on cold water immersion and hypothermia should be considered, particularly if the recommendations of this report calling for a nationwide grass-roots" volunteer campaign are carried

out. Some sort of national coordinating conference would be needed to assign responsibilities at the regional and local level and to kickoff the campaign.

Written information prepared for an elite audience must be in-depth and reasonably technical, while at the same time highly readable. This group's interest in the subject may be sufficient that they would dig the information out of a half-dozen Coast Guard reports and conference proceedings if they had to. But an interpretively written, readable compilation of the latest research and the hypothermia literature would be more useful to them. This summary should not dwell on methodology but rather present results with complete references to the literature, Coast Guard reports and proceedings.

The format for the report could be either a one-shot, "magazine-type" publication or, more suitably, a loose leaf "sourcebook" on hypothermia to which the official could add other information as he gets it from the Coast Guard and other sources. The Sourcebook should include an easily-reproducible, two-to-four-page "executive summary" in addition to complete sections on all four areas of program content discussed in section 4.3 of this report. If the illustrations, tables, figures and maps were printed in black on high-quality white paper, local state agencies and marine advisory programs could be encouraged to pull out figures pertinent to their geographic areas and reproduce them in their own boating safety literature. This "ripple effect" would greatly extend the public benefits of the Coast Guard publication.

Step 1:

Sourcebook on
Cold Water
Survival

Therefore, the recommended first step in a hypothermia education effort is publication of a Sourcebook on Cold Water Survival aimed at an elite audience.

Estimated press run: 1,000

Estimated cost --

Preparation	\$35,000
Printing & binder	9,000 (est. 100 pages)
TOTAL	\$44,000

Estimated time to completion: 9 months

Once the elite or official audience is informed, attention should be turned to that information source many boaters identified as both useful and trusted -- "informed people." Again, a good, basic, low-cost vehicle

is to get hypothermia information on the program at national and regional meetings of groups like the Boating Industry Association, the National Association of Engine and Boat Manufacturers Inc., and others. These meetings are normally covered by the boating media, which increases the chances of reaching industry insiders.

Another method would be to use equipment sales outlets, bait shops, marinas and other such business establishments in the high-risk regions identified by Harnett and Bijlani (1) as locations for point-of-purchase handout materials on cold water immersion. This would serve the dual purpose of introducing the marine businessmen to the subject as well as making information available to boaters themselves.

A likely format for this point-of-purchase distribution of information is a combination display poster/information piece. The poster should be colorful and eye-catching, and carry an attention-getting message related to hazard recognition, something on the order of "Do you know how cold the water is today?". It could be printed on heavy duty cardboard with an easel mechanism on back to make the unit free-standing for counter display; or, a cheaper, lighter-weight paper could be used to make a poster suitable for wall hanging.

The handout or "giveaway" information could also be handled in several different ways -- as a "tear-off" sheet or as a folded brochure displayed in a pocket on the poster. Some thought should be given to laminating the information sheet or printing it on a plasticized card to make it moisture-proof and suitable for storage or display on board the boat. These decisions on specific materials will have to be made with regard to the funds available and the costs vs. perceived benefits of a nationwide anti-hypothermia campaign. It would be appropriate to seek private sector funding from the recreational boating industry to help defray the costs of printing and materials.

Wyle Laboratories (9) reported that factual recall of boating information was better in test subjects who read a professionally designed pamphlet. Therefore, no matter what format is chosen, the poster and information sheet should be professionally written and designed, keeping in mind the demographic profile of boaters discussed in section 4.2 of this report. That means the information will be slanted toward a male, young-to-early-middle-age audience which reads at a higher-than-average level and is interested in other types of outdoor recreation.

As important as the writing and design of this vehicle, however, is the distribution of the posters. Since budgets and other simple physical constraints suggest the Coast Guard will not be able to place this information tool in 100 percent of the nation's marine business outlets, care must be used in selecting which businesses display the poster. The objectives should be to:

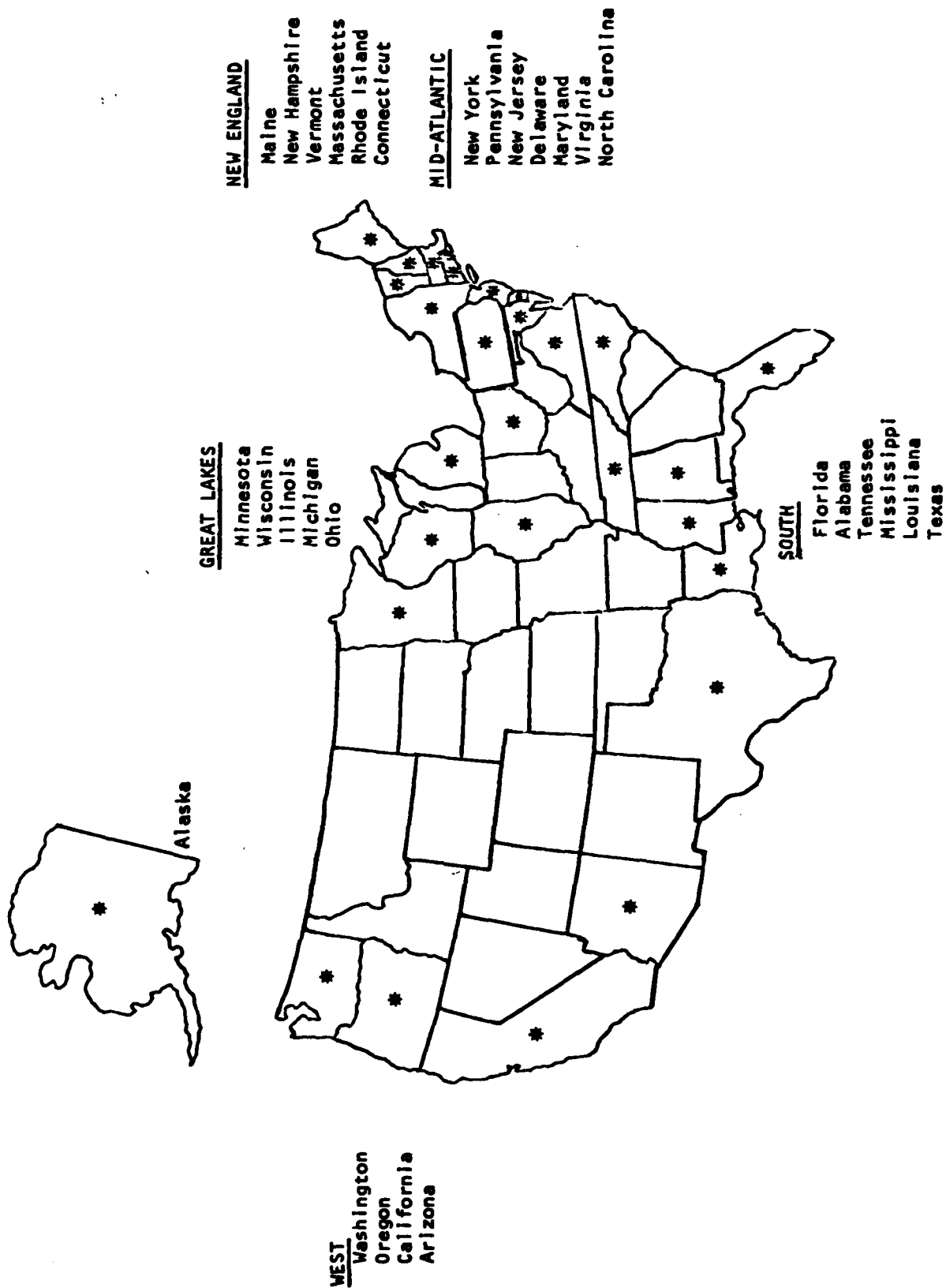
1. reach the largest number of boaters (therefore, select the busiest retailers and marinas), and
2. make sure every poster that was printed is displayed and used as it was intended.

For these reasons, every effort should be made to have the poster/handouts personally delivered to retailers by a local Coast Guard Auxiliary volunteer in the geographic regions emphasized. As suggested by Fleischer (10), federal funds should be used as seed money to develop and print materials and to organize and coordinate local volunteer efforts. The deliveryman, who would have a better feel for local conditions, could explain a little about the nationwide anti-hypothermia effort and gauge the businessman's interest and willingness to help. If he is responsive and agrees to display the poster in a prominent place, leave him one. If not, don't. Also, the retailers and marina operators should be told who to contact for replacement information sheets. This way the Coast Guard can test the use-rate on this particular tool and can spot areas where post-campaign attitudes can be sampled to evaluate the campaign.

The personal contact distribution of these materials is a difficult but desirable step in the total campaign. Without it -- if the posters were just mailed out to an imperfect list of marine retailers with a request to display them -- there would be no way to determine how many of the information leaflets found their way into the hands of boaters and how many wound up in a storeroom or in the trash can. At the very least, telephone contact should be made with businesses, and posters sent only to those managers who make a verbal commitment to display them.

The best way to organize for such an effort would be through the district offices of the Coast Guard and the Auxiliary units under their charge, concentrating on states in those broad geographical areas identified as having an above-average number of cold-related fatalities. The states which should receive primary attention are indicated by asterisks in Figure 5. These states were selected by regionalizing the data shown by Harnett and Bijlani (1), page 41. Distribution should be during January or February, slow months for the retailers before the spring boating season begins.

FIGURE 5
STATES FOR PRIMARY EMPHASIS
IN RECREATIONAL BOATER PROGRAM



Step 2:
Cold Water
Survival Display
and Handout
Information
Piece

Therefore, the recommended second step in the recreational boating program is publication of a combination poster-information sheet aimed at the boating public through display at marine retail outlets.

Estimated Quantity: 60,000 posters
2 million information pieces
(60,000 posters represents an average of

2,069 per state in the 29 high-risk states. Actual distribution will be weighted on the basis of boating effort statistics)

Estimated Cost (July, 1979 prices):

Preparation: \$15,000

Materials and Printing:

Heavy paper, 20x26-inch wall poster
w/pocket
(unit price \$0.15 each) \$10,000

Or Cardboard easel-stand, 9x12-inch counter
display
(unit price \$1.50 each) \$90,000

4-panel, one-fold 4x9-inch leaflet
(unit price \$.048 each) \$96,000

Estimated time to completion: 6 months
(not counting distribution)

Part of the problem -- indeed possibly the largest part -- in educating the public about cold water dangers is getting people to recognize cold as a life-threatening hazard. A person no doubt knows, in an abstract way, that cold water immersion would probably kill him. But he may not know he could be rendered incapable of swimming or holding on to a life buoy in a matter of minutes in 40 degree water.

Part of the challenge, then, is to make all boaters in the high-risk regions aware they should know or find out water temperature before boating and to make those numbers meaningful to them.

To reach such a large audience, some form of mass media utilization is necessary. Buying media time is too expensive, but public service announcements (PSA's) have been shown to be of limited value in safety campaigns (10). Advertisers compete for the choice, prime-time spots and few PSA's wind up there. They are often run during low-audience viewing hours (such as late night or early morning) and then stacked together with other PSA's, which lessens their impact.

Local television news would be an excellent vehicle for the cold water safety message, however. It is one of the consistently most highly-rated shows on the air. Furthermore, the Nationwide Boating Survey (4) revealed that 79 percent of boating households check the weather forecast before boating. More than 70 percent of those who check get their weather information from commercial radio and television.

More than any other newsmen, the weatherman has cast himself in a public service role, advising viewers when to prepare for rain and when to watch out for storms or tornadoes. In coastal areas, some television weathermen routinely announce water temperatures along with air temperatures. Many television sportscasters also give fishing reports, some of which include water temperature information. If these newsmen could be influenced to report and interpret water temperature data in terms of boating safety, their message would be heard by more people more often than any public service announcement, and at a lower cost to the Coast Guard.

The aims of program Step 3, an informational campaign on cold-water immersion for television newsmen, are:

1. to encourage those who routinely give water temperatures to interpret the figures for viewers, and
2. to get TV stations who do not report water temperatures to begin doing so, especially in coastal areas and in cities near large reservoirs with a lot of recreational boating activity.

Information given to TV newsmen should concentrate almost entirely on the message of hazard recognition and how to interpret water temperature data, with ample statistics and examples of cold-water accidents to convince them it is a real problem. Heavy emphasis should be placed on the seasonal distribution of the accidents, reminding them to look for spring-time conditions -- warm air temperatures and cold water temperatures -- as particularly dangerous times. The information should go to television stations in states in the high-risk regions identified by Harnett and Bijalni (1). A complete list of these stations is provided in Appendix A. Depending on cost factors, the Coast Guard could choose to contact only the leading (or most highly-rated) station in each market, or blanket the high-risk area by contacting all stations. NOAA National Weather Service all-weather stations should also be informed through established channels of communication between the Coast Guard and NOAA.

Again, local volunteer involvement would greatly enhance the chances of success for this step and minimize costs at the national level. Local Auxiliary personnel would know which stations already report water temperatures and, if so, whether it is a feature of the weather or sportscast. They could contact them by phone or in person and provide them with an information packet including reprints of the executive summary in the Sourcebook on Cold Water Survival (Step 1). Visual aids consisting of broadcast quality slides could also be made available to them to provide to stations. Some of the slides already contained in the Coast Guard presentation "Hypothermia and Cold Water Survival" would be most appropriate.

The ultimate goal of Step 3 would be to have television weathermen in the high-risk regions saying, as often as the situation warrants it, something on the order of the following reminder: "Well, the forecast is for a nice weekend, with sunny skies and temperatures in the mid 70's. But remember, boaters, the water temperatures are still pretty cold -- in the 50's and low 60's. After five minutes in water that cold you could be too weak and stiff to swim or even hold on to your boat if it swamps, so make sure you are wearing that PFD. And for more information on cold water survival, see the Coast Guard or your nearest marine dealer."

Obviously the information for television stations should be distributed on the heels of the point-of-purchase displays outlined in Step 2, so that once people become alerted to the hazard they will have a ready source of helpful information.

Step 3:
Cold Water Survival
Information Packet for
TV Stations

Therefore, the recommended third step in the recreational boating campaign is distribution of cold water survival information to television weathermen and, where appropriate, sportscasters.

Estimated Number of Packets:

All stations in high-risk regions: 348
Top stations in high-risk regions: 134

Estimated Cost:

Preparation:	\$2,000
Duplicate slides and Executive Summary:	\$1,500

Estimated time to completion: 3 months

Reinforcing and undergirding the whole hypothermia education effort for recreational boaters should be a professionally-run news program to inform the boating media and daily newspaper outdoor writers of the campaign kickoff and its progress at periodic intervals. This should be fairly easy to do using the information and artwork put together for the Sourcebook (Step 1) and the information sheet (Step 2). For the daily press, every effort should be made to localize releases with information on number of cold-related deaths, average water temperatures, etc., in that particular state or region. Personal contact between writers and editors and Coast Guard officials and/or researchers should also be encouraged.

Step 4:

News Program

Therefore, the recommended fourth step in a hypothermia education effort is the regular release of information either in story form or as background to boating magazines, newspapers and outdoor writers through a news release program and personal contact.

5.0 PROGRAM FOR COMMERCIAL SECTOR

5.1 Objectives

The educational program for the commercial sector is intended to address both the shipping and the fishing elements of the commercial sector. The broad objective is the same as for recreational boaters - to enhance recognition of the hazard that hypothermia represents, awareness of protection equipment and techniques and their effects, and proper techniques for treating hypothermia.

5.2 Audience Analysis

Of the 315,288 people (average monthly employment) in the U.S. maritime industry in 1977, only about 26,800 held seafaring or shipboard jobs (11). There are about six times that many commercial fishermen in the United States. These are the two segments of the commercial sector most likely to be involved in cold-water related fatalities.

Merchant seamen aboard vessels operating in U.S. ports must be members of one of several unions representing them. Commercial fishermen, on the other hand, are a largely independent and unorganized group. There is not a high degree of capitalization in U.S. fisheries as compared to modern industrial fishing states like Japan, Norway and the Soviet Union. Owner-captain operations predominate in many locales.

Not much is known about the demographics of the commercial sector on a national basis. There are a few socio-economic studies under way but not yet published on commercial fishermen (12), and raw data characterizing merchant seamen documented and licensed by the Coast Guard is being coded now for analysis later by that agency and the Maritime Administration.

It is known, however, that commercial shipping and fishing, even more than recreational boating, are almost exclusively masculine endeavors. For the purposes of a cold-water education effort, it can be assumed that the commercial audience is almost 100 percent male. There are also known to be wide ethnic and educational differences within the commercial sector (12). For example, differences range from the Great Lakes merchant mariners of

French, German and Polish extraction, to the Portuguese fishermen of New England and the West Coast, to the Afro-American shrimpers of the South Atlantic and Gulf. These differences can be significant barriers to communication, as evidenced by the recent friction in Gulf Coast fisheries surrounding the entry of Vietnamese refugee fishermen and their lack of understanding of local customs. In other words, what is effective in communicating with one group of fishermen may not work with the next group.

The average educational level reached by members of the commercial sector is no higher than that of the general population and, in selected areas of the country, is no doubt much lower. A mythical "average" fisherman is estimated by one industry expert to have 10 to 13 years of education (12); however, because of the admittedly wide regional differences in ethnic, linguistic and educational backgrounds such estimates have little meaning.

Another industry expert estimates that, even though the number of fishermen who can read may be higher, less than 20 percent of fishermen in his region do read newspapers and other publications with any regularity (13). As with farmers and other occupational groups, interpersonal communications with colleagues and peers is thought to be the single most influential factor in the adoption of new ideas and practices by fishermen.

Audience Attitudes

The attitudes of commercial seamen and fishermen toward cold water, a danger they face almost daily during certain seasons, is the largest stumbling block to a successful cold-water education effort. In several recent casualties in Alaskan waters, survival suits and the lead time needed to don them were available, but peer group pressure and the fear of being labeled alarmist or "chicken" kept crewmen from using them. One crewman who was ridiculed for donning his survival suit was the only survivor to be recovered from his vessel unharmed (14).

5.3 Program Content

The hazard-recognition content for the commercial sector is presented in Figure 6. This information includes temperature information on local waters. This can be included here because of the modes recommended (in

FIGURE 6
HAZARD-RECOGNITION CONTENT FOR
COMMERCIAL SECTOR

1. Cold can kill 3 ways:

- a. The shock of sudden immersion in very cold water may be lethal and may cause immediate drowning due to loss of control of breathing.**
- b. Cold can reduce physical strength and flexibility rendering one unable to swim or save himself.**
- c. Lethal reduction in body temperature -- hypothermia**
 - In 60°F water you could be dead in 2 hours**
 - In 50°F water you could be dead in 1 hour**
 - In 40°F water you could be dead in 20 minutes**

2. Familiarize yourself with the temperature of the water on which you operate.

3. Examples of typical temperatures in local waters.

Section 5.4) for delivering the program.

The program content relating to self-protection is presented in Figure 7. This figure presents only an outline of the most important equipment familiarization content which should be presented. Much more could be presented through demonstrations. However, an important question must be addressed by the Coast Guard. Namely - does the Coast Guard want to become involved in demonstrating the use of commercially-available survival equipment to groups who are considering purchasing such equipment? To do so is to risk accusations of bias and unfair practices. On the other hand, the subject matter would be communicated much less effectively if only generalities are used. The best approach (based only on considerations of education program effectiveness) unquestionably would be to show and demonstrate a selection of representative equipment.

The content relating to first-aid treatment for hypothermia is shown in Figure 8. The recommendation is dichotomized into one procedure for mild hypothermia (rectal temperature between 89 and 95°F) and one for profound or severe hypothermia (rectal temperature below 89°F). These levels of hypothermia are different on many bases, four of which are described in the following chart.

Criterion	Hypothermia	
	Mild	Severe
Consciousness	Conscious	Unconscious
Shivering	Present	Absent
Respiration	At or near normal	Depressed
Afterdrop	Not Life-Threatening	Life-Threatening

Much less care is necessary in treating mild hypothermia than severe hypothermia simply because a mild case can tolerate much more mistreatment than a severe case. There are also differences in the performances of certain rewarming therapies when applied to these two general conditions, as discussed by Harnett, et al. (17). Because significant depression in the respiratory minute volume (RMV) may be present at rectal temperatures below 89°F, the results with treatments involving inhalation therapy can be altered. In particular, selective surface heating even in combination with inhalation therapy cannot be recommended when afterdrop cannot be

FIGURE 7
SELF-PROTECTION CONTENT FOR
COMMERCIAL SECTOR

1. When working on cold water, be prepared to survive in it. Unpredictable factors (e.g., weather and equipment malfunctions) may make your life depend upon this preparation.
2. Cold exposure impairs swimming ability, a personal flotation device is essential protection during cold immersion.
3. Specially-designed survival equipment is available to provide flotation and to protect against cold immersion. Extensions in survival time for an average man from 20 percent to 685 percent (as compared to snug, vest-type PFD's) may be achieved. Even greater extensions are afforded thin individuals.
4. Equipment familiarization reduces donning time from 7 percent to 56 percent, depending on the particular equipment involved.
5. Cold impairs swimming ability and swimming shortens survival time -- swim for shore only when confident you can make it.
6. Get out of the water if possible. If not, then get as far out as you can, e.g. on a capsized boat.
7. Without a survival suit, the HELP (heat escape lessening position) can significantly prolong survival.
8. A group of immersion victims without survival suits should huddle in a ring.
9. If not wearing an approved Type I or Type II PFD or exposure suit, make provisions to keep your mouth out of the water if you should become unconscious; e.g. tie yourself to a tree top, capsized boat, etc.
10. Make yourself as locatable as possible; use whistle, floating flag, display brightly colored materials, etc.

FIGURE 8
FIRST-AID CONTENT FOR
COMMERCIAL SECTOR

MILD HYPOTHERMIA - Victim conscious and shivering (rectal temperature between 89-95°F).

1. Remove victim from cold exposure, minimizing his physical activity.
2. Remove wet clothing.
3. Initiate rewarming using one of the following methods:
 - a. Immerse body (torso only) in water at 90°F and warm it to 110°F. Or,

Insulate victim from his environment (warm or cold and:
 - b. Administer warmed (110°F) humidified oxygen or air by inhalation therapy.
 - c. Apply heat (110°F hot pads, hot water bottles, or wet towels) to the victim's neck, head, torso and groin. This is preferably done in combination with inhalation therapy (item b).
 - d. Apply warmth by direct body contact with a member of the rescue team. Both victim and rescuer should be undressed to facilitate heat transfer.

SEVERE HYPOTHERMIA - Victim unconscious or not shivering (rectal temperature below 89°F).

1. Remove victim from cold exposure, handling him gently.
2. Remove wet clothing and insulate victim well from his environment (warm or cold).
3. If not breathing spontaneously, initiate mouth-to-mouth resuscitation at a reduced rate.
4. If no pulse is perceptible, initiate external cardiac massage at a reduced rate.
5. Rewarm slowly at first using, only inhalation therapy. When the rate of spontaneous respiration shows significant improvement rewarming may be augmented by applying heat to the torso.

ALWAYS

1. Continue resuscitation/rewarming efforts until the victim is rewarmed whether he responds or not.
2. Transport victim of severe hypothermia to a hospital if possible.

tolerated because of the depression of RMV and the resulting reduced contribution of the inhalation therapy to rewarming treatment. The selective surface heating can be recommended for treatment of mild hypothermia only because the afterdrop it is likely to induce can be tolerated.

The recommendation to remove wet clothing is based upon the assumption that insulating material will not be available which possesses the following three properties discussed by Harnett, et al (17).

1. Effective thermal insulation from the patient's environment.
2. Resistance to deterioration of thermal insulation property when directly exposed to water.
3. A barrier preventing evaporative cooling of a wet patient.

The self-treatment content for the commercial sector is shown in Figure 9. This material is the same as was given for recreational boaters.

5.4 Modes of Delivery

Because of the audience factors discussed in Chapter 3 and Section 5.2 of this report, mass media communications tools like television, radio and newspapers can be virtually ruled out as effective means of reaching the commercial sector. First, the audience is too small for that type of media "shotgun" approach. Second, most commercial seamen and fishermen will need "hands on" experience in donning cold-water survival suits and, if necessary, practice in performing their regular deck duties while wearing protective equipment. And lastly, the most effective transfer of information and learning will take place within the commercial audience through interpersonal communication among peers and co-workers. This is true of almost every occupational and professional group, whether it be farmers, fishermen or doctors. People may be swayed by a shallow advertising message on which soap to use, but when it comes to decisions about equipment and practices related to their livelihood, most rely on numerous sources of information (6). Feedback and positive reinforcement from his peers will be needed to move the commercial seaman and/or fisherman from awareness to adoption of new cold water safety practices, including the use of protective gear.

FIGURE 9
SELF-TREATMENT CONTENT FOR
COMMERCIAL SECTOR

1. Remove yourself from cold exposure, if possible.
2. Remove wet clothing and add insulative protection whether in a warm or cold environment.
3. If food is available, eat it (particularly carbohydrates and warm foods). Avoid alcohol.
4. Rewarm yourself by applying heat to your torso.

It is recommended that the Coast Guard actively initiate a nationwide program of cold water survival workshops and demonstrations in major port areas and states where there are large concentrations of commercial seamen and fishermen. These have been tried with good success by commercial fishing advisory groups in several individual states. Every effort should be made to draw on this experience and coordinate Coast Guard efforts with existing local programs. Planning and setting the major objectives and areas of program content should be done by the Coast Guard at the national level (see recommendations in Sections 5.1 and 5.3 of this report). However, local planning, arrangements and sponsorship should be contracted to organizations and agencies that are familiar with local conditions and who have high credibility in the merchant marine and fishing communities. These would be, for merchant men, local officials and/or safety officers of the seafaring unions (listed in Appendix B), and the Sea Grant marine advisory and fisheries extension programs in each state (listed in Appendix C). Coordination of the individual workshops could be undertaken on a regional or state-by-state basis. They should be planned to take place during the slowest season of the year for commercial shipping and commercial fishing in each locale. The instructional portion of selected workshops could be video taped for re-use by the local program at later demonstrations.

In terms of the merchant seamen portion of the audience, the Great Lakes should be the top priority area addressed first by a series of workshop training sessions. Great Lakes shippers will soon be required to carry cold water exposure suits; the aim of the workshop series would be to make sure they are put to effective use. Planners of the workshop series for commercial fishermen should set their priority areas by starting at the top of Ecker's ranking of deaths due to fishing vessel casualties (Figure 3) and work their way down through Alaska, Chesapeake Bay, Pacific Northwest (Washington and Oregon), Northern California, Maine, etc. In addition to Sea Grant-funded marine advisory programs in individual high-risk states, there are regional advisory groups set up that should be invited to bid on the contract to hold the workshops. These include the Fishing Vessel Safety Center at the University of Washington, NEMAS (New England Marine Advisory Service) headquartered at the University of Rhode Island, and the New England Fisheries Steering Committee, which has a new Educational/Seminar/Communications Division.

As in the program for recreational boaters, the commercial sector

education effort should concentrate first on an "elite" audience of boat captains and ship safety officers, opinion leaders who could then return to their vessels and pass the information on to co-workers. Instruction should be the joint responsibility of the local contact and the visiting Coast Guard "expert", who ideally would have some experience with both the commercial endeavor and cold water hazards. For example, a fisherman or commercial seaman who had survived a cold water disaster because he was wearing a survival suit -- would be an excellent person to recruit to lead the workshops throughout the nation.

Step 1:

Cold Water Survival

Workshops for Merchant

Seamen and Commercial

Fishermen

Therefore, the recommended first step in the commercial sector education effort calls for the Coast Guard to contract with maritime unions and marine advisory programs to hold regional workshops and demonstrations, with planning and instruction to be handled jointly by the Coast Guard and the local agency.

Estimated number of workshops: 280
(average of 10 each for 28 coastal and Great Lakes states, weighted for casualty risk and shipping/fishing effort)

Estimated cost:

Personnel (to administer program and instruct workshops; 30 man-months)	\$60,000
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Travel	\$50,000
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Equipment (survival equipment for demonstration purposes	1,000
--	-------

Support costs (supplies, postage, \$15,000 phone, reprinting handout materials, etc.)

TOTAL	<u>\$126,000</u>
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Meetings such as Fish Expo, regional Fishermen's Forums, the Offshore Technology Conference and others afford an opportunity to reach large numbers of shipping and fishing industry leaders (who make or help make the "buy" decisions on safety and survival gear). Information presented

at such meetings could take the form of a simple, illustrated presentation during the formal program, or the form of an exhibit incorporating the latest principles of participatory learning.

A very effective "walk-through" exhibit on cold-water survival could be designed in modules which could then be combined in several different ways depending on the audience. A basic unit on the physiology of hypothermia could be combined, for a commercial shipping audience, with a module demonstrating exposure suits. A unit showing smaller, less expensive protective gear like vests and jackets could be substituted for an audience of small commercial fishermen (or even recreational boaters). Some very innovative features could be incorporated into the modular exhibit, for example:

- a microcomputer programmed to display average water temperatures when the participant quizzes it about a particular body of water at a particular time of the year. The same computer could give predicted survival times if the participant punches in water temperature and suit type.
- a chance for participants to test their cold tolerance and their preconceived attitudes about cold water by trying to keep their hands in a container of 50- and/or 60-degree water for five minutes.
- short videotapes on different subjects (gear, rewarming, first-aid, etc.) that could be requested by the participant at the touch of a button.

Step 2:

Cold Water Survival

Traveling Exhibit

Therefore, the recommended second step in the commercial sector educational effort is a modular, walk-through traveling exhibit on cold water survival which could be used at national and regional meetings of commercial seamen and fishermen, shipping company officials, marine insurers, etc.

Estimated cost:

(for three modules, approximately
20-feet each, @ approximately \$500
per linear ft.) \$30,000

As in the program for recreational boaters, a professionally-run news program would complement and expand upon the efforts to teach commercial seamen and fishermen through direct contacts like workshops and exhibits.

The audience for the news program would be commercial trade publications, in addition to newsletters of all the various maritime unions, fishing industry associations, Sea Grant marine advisory programs, etc. Given the proper commitment to a nationwide hypothermia effort, this step should be achievable through the present resources of the Coast Guard's news and information programs.

6.0 PROGRAM FOR COAST GUARD PERSONNEL

6.1 Objectives

The primary objective of the program for Coast Guard personnel is to impart to current personnel and those entering the Coast Guard in the future, information relating to the four selected content areas. Two problems are addressed: (1) the rapid establishment of the required knowledge and expertise among present Coast Guard personnel and (2) the establishment of a mechanism to indoctrinate personnel entering the Coast Guard in the future. The content of these two programs should be the same but the methods of delivery must be different.

A secondary objective of this program is to expand the "elite" group referred to in Step 1 of the program defined in Chapter 4. This is a function which all Coast Guard personnel are in a position to perform by virtue of its mission and reputation. This objective makes desirable the communication of somewhat more detailed information in certain areas than was necessary for the other sectors.

6.2 Audience Analysis

As was observed in Section 2.3, the sector of Coast Guard personnel is composed largely of enlisted men (83.4 percent) and fewer commissioned officers (12.9 percent) and warrant officers (3.7 percent). The age distributions of the personnel in each of these categories are shown in Table 8. The median ages for the categories are as follows.

<u>Personnel Category</u>	<u>Median Age (years)</u>
Enlisted Men	22.2
Commissioned Officers	30.5
Warrant Officers	37.9

It may be seen in Table 8 that 90 percent of the enlisted men are below the age of 35 while 90 percent of the commissioned officers and 90 percent of the warrant officers are below 45.

The educational levels of the three categories of Coast Guard personnel are shown in Table 9. It may be seen only 0.2 percent of enlisted men have

TABLE 8
AGES[†] OF COAST GUARD PERSONNEL

AGE	ENLISTED MEN			WARRANT OFFICERS			COMMISSIONED OFFICERS		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
0 - 19	4,343	14.1	14.1	0	0	0	0	0	0
20 - 24	14,630	47.6	61.7	0	0	0	627	13.2	13.2
25 - 29	5,372	17.5	79.2	14	1.0	1.0	1,386	29.2	42.4
30 - 34	3,112	10.1	89.3	213	15.7	16.7	1,055	22.2	64.6
35 - 39	2,258	7.3	96.6	569	42.1	58.8	786	16.5	81.8
40 - 44	854	2.8	99.4	396	29.3	88.1	525	11.1	92.2
45 - 49	165	0.5	99.9	136	10.0	98.1	243	5.1	97.3
50 - 54	25	0.1	100	21	1.6	99.7	106	2.2	99.5
55 & Over	9	0.0	100	4	0.3	100	22	0.5	100
Totals	30,768	100		1,353	100		4,750	100	

† Ages as of April 30, 1979

TABLE 9
EDUCATION LEVELS [†] OF COAST GUARD PERSONNEL

	ENLISTED MEN		WARRANT OFFICERS		COMMISSIONED OFFICERS	
	Number	Percent Cumulative Percent	Number	Percent Cumulative Percent	Number	Percent Cumulative Percent
Graduate or Professional Study	18	0.1 0.1	0	0 0	93	6.2 6.2
College Graduates	273	1.3 1.4	5	31.2 31.2	1,379	91.7 97.9
Some College	2,754	13.2 14.6	6	37.5 68.7	22	1.5 99.4
High School Graduates	15,709	75.6 90.2	4	25.0 93.7	8	0.5 99.9
Some High School	1,989	9.6 99.8	1	6.3 100	2	0.1 100
Grade School	48	0.2 100	0	0 100	0	0 100
Totals for Which Information Was Available	20,791	100	16	100	1,504	100
Total Personnel	30,768		1,353		4,750	
Percent Personnel with Known Education Level	67.6		1.2		31.7	

[†] As of April 30, 1979

less than an 8th grade education. This contrasts with 2.3 percent of recreational primary boat operators (Section 4.2) and 11.6 percent of American adults in that category. The great majority of enlisted men (75.6 percent) have high school educations. However, only 14.6 percent have completed any college-level study. This contrasts with 28.4 percent of recreational boaters who have at least some college. These data indicate that the educational backgrounds of enlisted men are much less diverse than are those of recreational boaters. A smaller proportion of the enlisted men than recreational boaters have either no high school or at least some college. This information suggests that the educational program for Coast Guard enlisted men may be aimed at an audience which is relatively narrow in terms of education.

Table 9 also shows that 93.7 percent of Coast Guard warrant officers and 99.9 percent of commissioned officers are high school graduates. Nearly one-third of the warrant officers are college graduates while 97.9 percent of commissioned officers are.

As was mentioned in Section 2.3, Coast Guard personnel routinely participate in training of a variety of types. General military training is conducted at all Coast Guard units. It includes training for advancement and all-hands training. Operational training is conducted primarily at the duty station and is intended to enhance the performance of a unit. This contrasts with on-the-job training which is also conducted primarily at the duty station but is intended to improve the performance of an individual.

The military requirements for advancements, in first-aid and safety, are shown in Figure 10, including both practical and knowledge factors. The levels of advancement (pay grades) for which they are required are also indicated in Figure 10. This information was taken from the Enlisted Qualifications Manual. The relevance of requirements in the areas of first-aid and safety to hypothermia is obvious. In fact the second knowledge factor under "survival" indicates that some consideration has been given to the possibilities of cold exposure.

It may be seen in Figure 10 that most of the first-aid and survival requirements must have been satisfied to achieve the pay grade of E-2. The distribution of Coast Guard enlisted men over the ten pay grades, as of 30 April 1979, is shown in Table 10. It may be seen that 96.2 percent of

FIGURE 10 MILITARY REQUIREMENTS FOR ADVANCEMENT

Required for
Advancement to:

FIRST AID

Practical Factors

Demonstrate how to apply immediate treatment for shock.....	E-2
Demonstrate how to control arterial and venous bleeding by compress, finger pressure, and tourniquet.....	E-2
Administer artificial respiration by the mouth-to-mouth method.....	E-2
Apply a battle dressing.....	E-3
Prepare and apply an improvised splint.....	E-3
Transport an injured person by fireman's lift and tied-hands crawl...	E-3

Knowledge Factors

Rules of personal hygiene concerning exercising, conditioning, dysentery, dental care, drugs, smoking cigarettes, alcohol, tattoos, and venereal disease, care of bedding and clothing, close living quarters; dangers of self treatment.....	E-2
Purpose and limitations of first aid.....	E-2
Symptoms of, and immediate treatment for shock.....	E-2
Procedures for rescuing a person in contact with an energized electrical circuit.....	E-2
Occasions and precautions for administering a morphine syrette.....	E-3
Classification of burns, symptoms of, and first-aid treatment for each.....	E-3
Symptoms of, and first-aid treatment for, simple and compound fractures.....	E-3

SURVIVAL

Practical Factors

Enter water feet first from height of 5 feet and swim 50 yards; float and tread water.....	E-2
Demonstrate technique for preparing and using clothing and buoyant objects for staying afloat.....	E-2
Demonstrate how to put on and use inherently buoyant and O ₂ inflatable lifejackets.....	E-2
Demonstrate techniques of swimming through oil, flames, and debris.....	E-2

Knowledge Factors

Use and care of inherently buoyant and CO ₂ inflatable life preservers.....	E-2
Preparation for abandoning ship; best ways of going over the side; and type of clothing to be taken in abandoning ship in hot or cold climate.....	E-2
Use of desalting kit and solar distilling equipment for obtaining drinking water; methods of catching and stowing rain-water.....	E-4
Use, care, and stowage of the following life float equipment:	
a. Signal mirror, day and night distress signal, and dye marker....	E-4
b. First aid kit, rations, and tarpaulin.....	E-4

TABLE 10
ENLISTED MEN PAY GRADE DISTRIBUTION [†]

<u>Pay Grade</u>	<u>Number</u>	<u>Percent</u>	<u>Cumulative Percent</u>
E-10	1	0.0	0.0
E-9	309	1.0	1.0
E-8	471	1.5	2.5
E-7	2,681	8.7	11.2
E-6	5,079	16.6	27.8
E-5	5,296	17.2	45.0
E-4	6,568	21.3	66.3
E-3	4,952	16.1	82.4
E-2	4,233	13.8	96.2
<u>E-1</u>	<u>1,178</u>	<u>3.8</u>	100.0
TOTAL	30,768	100.0	

† As of 30 April 1979

the force had achieved the pay grade of E-2 at that time. Assuming that this percent is representative of the steady-state distribution, adding educational requirements concerning hypothermia to those existing at the E-2 level would, in the long run, have formally reached 96.2 percent of the enlisted men at any time. New recruits (E-1's) would not yet have received the information/training formally but could have been reached through the program for recreational boaters or informally through more senior Coast Guard personnel.

As mentioned earlier, 3.7 percent of Coast Guard personnel are Warrant Officers. These ranks are open to enlisted men, above the grade of E-4, on a competitive basis. Typically, successful candidates are in the enlisted grades E-7, 8 or 9. The maintenance phase of the program for Coast Guard personnel does not need to address first-exposure training of Warrant Officers. By providing this training to junior-grade enlisted men, Warrant Officers would be assured to have received it.

Commissioned Officers represent 12.9 percent of Coast Guard personnel. They are taken from five sources.

1. The Coast Guard Academy
2. Officer's Candidate School
3. Direct commissioning
4. Promotion of Warrant Officers
5. Induction of Commissioned Officers from other military services

The Coast Guard Academy and Officer's Candidate School provide the great majority of Commissioned Officers. Direct commissioning is used primarily to induct individuals with professional skills, primarily physicians associates and lawyers. These personnel generally perform duties for which specific hypothermia education is not required. Commissioned Officers who were promoted from the ranks of Warrant Officers in the maintenance phase of the program would have already had the training, as all other Warrant Officers had, as an enlisted man. Commissioned Officers inducted from other branches of military service are normally pilots. These inductions do not occur frequently or even regularly. They do not account for substantial percentages of Coast Guard Commissioned Officers. These officers are, however, as likely to be exposed to risk of hypothermia as any in the Coast Guard.

6.3 Program Content

The program content relating to hazard recognition is shown in Figure 11 and content relating to self protection is presented in Figure 12. This information is largely as presented in the previous chapters. Item 6 in Figure 12 is intended to indicate that any equipment which is selected by the Coast Guard for use by their personnel should be included in the program in the form of equipment familiarization. The specific content of this aspect of the program would depend upon the particular equipment chosen and cannot be defined in this report. It should address all pertinent information relating to techniques for donning and proper modes of wearing, maintaining, and using the equipment. The improvement in survival time associated with the equipment should also be communicated.

The content material relating to first-aid is shown in Figure 13. It is essentially the same as was recommended for the commercial sector. The recommendation to remove wet clothing from victims of severe hypothermia is based on the assumed unavailability of insulating material providing the three properties listed in Chapter 5. If such material is available then only outer clothing containing large amounts of water need to be removed.

The content material relating to self treatment is shown in Figure 14. The same basic material is shown here as was recommended for recreational boaters and the commercial sector. It is possible that additional materials could be developed which would make maximum use of special equipment which might be available to Coast Guard personnel.

6.4 Modes of Delivery

Two fundamentally different problems must be addressed in determining modes of delivery for the program aimed at Coast Guard personnel. A program should be established which will provide the desired training to new personnel as they enter the service. However, if only this new-personnel training is utilized, individuals who enter the service prior to initiation of this training could spend their entire careers without receiving it. Potentially, the entire force would not have received the training for

FIGURE 11
HAZARD-RECOGNITION CONTENT FOR
COAST GUARD PERSONNEL

1. Cold can kill 3 ways:

- a. The shock of sudden immersion in very cold water may be lethal and may cause immediate drowning due to loss of control of breathing.**
- b. Cold can reduce physical strength and flexibility rendering one unable to swim or save himself.**
- c. Lethal reduction in body temperature -- hypothermia**
 - In 60°F water you could be dead in 2 hours**
 - In 50°F water you could be dead in 1 hour**
 - In 40°F water you could be dead in 20 minutes**

2. Familiarize yourself with the temperature of the water on which you operate.

FIGURE 12
SELF-PROTECTION CONTENT FOR
COAST GUARD PERSONNEL

1. When boating on cold water, be prepared to survive in it. Unpredictable factors (e.g., weather and equipment malfunctions) may make your life depend upon this preparation.
2. Cold exposure impairs swimming ability, a personal flotation device is essential protection during cold immersion.
3. Snugly-fitted vest-type PFD's with smooth inner surfaces (as opposed to corrugated surfaces) can extend the survival time of an average man in cold water by nearly 60 percent as compared to kapok, key hole-type PFD's.
4. Specially-designed jacket-type equipment is available to provide flotation and to protect against cold immersion. Extensions in survival time for an average man from 20 to 145 percent (as compared to snug, vest-type PFD's) may be achieved. Even greater extensions are afforded thin individuals.
5. With many hypothermia protection devices, fit is extremely important (most should be comfortably snug).
6. Coast Guard Equipment Familiarization.
7. Cold impairs swimming ability and swimming shortens survival time -- swim for shore only when confident you can make it.
8. Get out of the water if possible. If not, then get as far out as you can, e.g. on a capsized boat.
9. The HELP (heat escape lessening position) can significantly prolong survival.
10. A group of immersion victims should huddle in a ring. Any children present should be placed inside.
11. If not wearing an approved Type II PFD, make provisions to keep your mouth out of the water if you should become unconscious; e.g. tie yourself to a tree top, capsized boat, etc.
12. Make yourself as locatable as possible; use whistle, floating flag, display brightly colored materials, etc.

FIGURE 13
FIRST-AID CONTENT FOR
COAST GUARD PERSONNEL

MILD HYPOTHERMIA - Victim conscious and shivering (rectal temperature between 89-95°F).

1. Remove victim from cold exposure, minimizing his physical activity.
2. Remove wet clothing.
3. Initiate rewarming using one of the following methods:
 - a. Immerse body (torso only) in water at 90°F and warm it to 110°F. Or,

Insulate victim well from his environment (warm or cold) and:
 - b. Administer warmed (110°F) humidified oxygen or air by inhalation therapy.
 - c. Apply heat (110°F hot pads, hot water bottles, or wet towels) to the victim's neck, head, torso and groin. This is preferably done in combination with inhalation therapy (item b).
 - d. Apply warmth by direct body contact with a member of the rescue team. Both victim and rescuer should be undressed to facilitate heat transfer.

SEVERE HYPOTHERMIA - Victim unconscious or not shivering (rectal temperature below 89°F).

1. Remove victim from cold exposure, handling him gently.
2. Remove wet clothing and insulate victim well from his environment (warm or cold)
3. If not breathing spontaneously, initiate mouth-to-mouth resuscitation at a reduced rate.
4. If no pulse is perceptible, initiate external cardiac massage at a reduced rate.
5. Rewarm slowly at first using only inhalation therapy. When the rate of spontaneous respiration shows significant improvement rewarming may be augmented by applying heat to the torso.

ALWAYS

1. Continue resuscitation/rewarming efforts until the victim is rewarmed, whether he responds or not.
2. Transport victim of severe hypothermia to a hospital as soon as possible.

FIGURE 14
SELF-TREATMENT CONTENT FOR
COAST GUARD PERSONNEL

1. Remove yourself from cold exposure, if possible.
2. Remove wet clothing and add insulative protection whether in a warm or cold environment.
3. If food is available, eat it (particularly carbohydrates and warm foods). Avoid alcohol.
4. Rewarm yourself by applying heat to your torso.

30 years or more after the inception of this new-personnel training. Therefore, the second problem which must be addressed is the initial training of the force on hand when the program is initiated.

Training of the Force on Hand

While issuance of a Commandant Instruction could communicate the desired knowledge factors, it could not effectively address the practical factors such as equipment familiarization. Furthermore, the knowledge factors would be learned in a way more likely to have real effects upon behavior through more personal contact. It is recommended that training sessions be organized involving live presentation of the desired material to all hands. These presentations should include demonstrations with actual equipment of the types selected for use by Coast Guard personnel. This training could be delivered by a cadre of selected personnel who were assembled at a convenient location and prepared to deliver the training. The all-hands training could be delivered at the various Coast Guard units under the heading of General Military Training.

The presentations should be structured to include a reasonable amount of repetition. Descriptions of accidents known to have involved cold-related fatalities could be used as an attention getter. They would also serve to reinforce the hazard recognition material and will provide natural transition into it.

The training should be structured to involve a maximum amount of active participation by the students. This could include physical participation in equipment demonstrations and verbal participation in the training by organizing the material following the Socratic method. This would tend to retain the attention of the students once it had been captured.

Physical training aids should be used as much as possible. This might include containers of water, at various temperatures, to be felt. Interest might be engendered in younger students by a "guess the temperature" contest with some suitable prize awarded for the best guess.

The timing of training the force on hand should be related to the time that new personnel training is initiated. These training programs should be time phased such that no gaps in training permit any new personnel to miss both training programs.

New Personnel Training

The mode of delivery recommended for training of new enlisted personnel is simply that it should be integrated into General Military Training that they presently receive at the E-1 level. The specific techniques used to deliver the training should involve as much physical participation as is practicable.

The training of new Commissioned Officers should be accomplished by integrating it into existing training opportunities at the Coast Guard Academy and Officer's Candidate School. This will accommodate the preponderance of new Commissioned Officers. Flight officers inducted directly from other branches of military service should, because of the likelihood of them being exposed to risk of cold immersion, receive some hypothermia training. It probably could be integrated into the Coast Guard indoctrination they receive.

7.0 SUMMARY AND RECOMMENDATIONS

A coordinated national public information and education program is proposed to inform recreational boaters, commercial seamen and fishermen, and Coast Guard crewmen about cold water hazards, the dangers of hypothermia, its prevention and treatment. Because of wide differences among these groups in size and composition, a single program was deemed to be insufficient to reach all populations at risk. Three essentially separate campaigns, with some overlap among them, are recommended.

Definition of the Programs

The three major elements of the recommended program for recreational boaters are the following.

1. A Sourcebook on Cold Water Survival -

A comprehensive synthesis of hypothermia information and research results written in a readable style and aimed at an "elite" audience of professionals and opinion leaders in the boating safety field. This vehicle would lay the groundwork for subsequent efforts by educating the "official sources" of information boaters have identified as most credible when it comes to new ideas. It would provide the basis for one vital and top priority step, integrating cold water safety instruction into existing boating courses of the Coast Guard Auxiliary and Power Squadron, state agencies, Red Cross, Scouting groups and others. And it would provide "official" Coast Guard-sanctioned data on hypothermia in a reproducible format to local agencies and groups who want to publish their own, regionalized information materials.

2. A point-of-purchase display and giveaway information piece

to be placed selectively in major recreational marine businesses such as marinas, equipment sales outlets, etc., throughout the high-risk regions. This vehicle would serve the dual purpose of informing both boaters themselves and one of their major sources of information "informed people" such as marine operators, bait and tackle shop sales clerks, and others.

3. Packets of information on cold water hazards for television newsmen in high risk areas, encouraging them to provide and interpret water temperature data for nearby bodies of water.

Having television weathermen repeatedly reinforce the message of cold water hazard recognition would reap behavior-motivating benefits that would extend beyond the recreational sector and into the commercial and military sectors.

The recommended steps in an education program for the commercial sector are the following.

1. A series of workshops in high-risk areas where commercial seamen and fishermen can get "hands on" experience in donning and working with protective gear and exposure suits. Such workshops would also afford the chance for interpersonal communication and the kind of "peer reinforcement" deemed necessary to influence the attitudes and habits of groups like merchant seamen and commercial fishermen.
2. A traveling exhibit for use at annual meetings, trade and industry association shows and conferences, etc. Employing innovative techniques of participatory learning, the modular design would make the exhibit easy to transport and to adapt to different audiences (even recreational boaters).
3. An aggressive news program aimed at trade and special interest magazines and newspapers to keep them informed about the campaign and encourage them to give news coverage to the workshops. This would help extend the benefits of Steps 1 and 2 to those merchant mariners and fishermen who do not participate in the workshops or exhibit shows.

The recommended steps in the program recommended for Coast Guard personnel are the following.

1. The conduct of special training for all hands presently in the Coast Guard. This would be done at their units in the manner of General Military Training.
2. New enlisted men should receive the prescribed training through the first-aid and survival elements of their General Military Training. Practical and knowledge factor requirements should be specified for advancement to the level of E-2.
3. Newly Commissioned Officers should be trained as prescribed at the Coast Guard Academy and Officer's Candidate School.
4. New flight officers inducted from other branches of military service should receive the prescribed training during their initial indoctrination and prior to beginning flight duties.

Flexibility of the Programs

The decision to implement all or a part of this campaign will have to be made by the Coast Guard on the basis of agency priorities and the availability of funds, including outside funding, for specific elements.

The total campaign as outlined in this report would cost about \$404,500 over a three-year period, but because of the flexibility built into the program, individual elements can be combined in a number of different ways depending on budget considerations. For example, in the recreational program, the Coast Guard could elect to produce Steps 1 and 3 (the elite "Sourcebook" and the information packet for television newsmen) and encourage local groups and state boating agencies, through matching grants, to develop their own point-of-purchase materials to fit local conditions, with the technical support of the Coast Guard. Alternatively, the point-of-purchase materials could be developed nationally and "sold" at bulk rates to private sector companies like equipment manufacturers and marine insurers. They would not actually buy the materials, but rather the right to have their company name and logo printed on the information piece to acknowledge sponsorship.

Although personal contact by a local volunteer would be ideal in distributing hypothermia information to local television stations (Step 3, for recreational boaters) even that step could be modified. In a coordinated program, the Coast Guard personnel conducting workshops for the commercial sector could also contact television stations in the areas he visits and give them the cold water information packet. He would probably be invited to extend his exposure by appearing on a talk show or the "news" portion of the station's evening news. NOAA National Weather Service all-weather stations should also be alerted to emphasize water temperatures during peak cold water danger months.

In the commercial sector program, it would be appropriate and feasible to seek funding for the modular traveling exhibit from manufacturers of approved protective equipment whose products are on display. The workshops themselves could be investigated as possible joint projects of the Coast Guard, Sea Grant, the commercial shipping lines and marine insurers. They could be video taped, with the tapes used repeatedly by the local agency for the instructional portion of subsequent workshop demonstrations. Perhaps some arrangement could be worked out whereby vessels whose captains had gone through the cold water workshops would have lowered insurance premiums.

Unlike some safety campaigns that rely too heavily on fancy media gimmicks like public service announcements, etc., the cold water safety program would have carry-over benefits that would last beyond the two- to three-year life of the campaign. Boating safety officials throughout the nation would have a usable, reliable reference on cold water safety that could be

easily updated as new research is reported, and as new equipment comes on the market and is evaluated, perhaps by a math model, see Baker, et al. (16). Once in the habit of doing so, television weathermen and sportscasters might continue to alert viewers to cold water conditions and hazards for years to come. Once informed themselves, employees of marine businesses will be able to advise boaters about cold water hazards and answer their inevitable questions long after the supply of giveaway information materials is exhausted. Also, with routine maintenance and periodic updating of content, a modular cold water survival exhibit could hold up and be useful for five to eight years or more.

Evaluation of the Programs

No campaign should be undertaken, however, without making provisions for its evaluation. Pilot "test marketing" of the giveaway information piece for recreational boaters will be needed to determine whether the use-rate of the item is significantly increased by laminating or plasticizing it to make it suitable for storage on board the vessel. Simpler and less expensive evaluations can be done for the other communications tools. Television newscasts can be surveyed by local volunteers before and after distributing cold water information to see if the newscasts contain the new information.

With the commercial sector, pre-tests and post-tests of the participants knowledge of hypothermia should accompany the workshops. The tests can check both knowledge and skill factors, such as survival suit donning speed. A simple survey of boat and trade show attendees who go through the cold water survival exhibit would help evaluate that tool. But no matter what tools are chosen in whatever combination, several factors were determined to be of overriding importance in the design of any anti-hypothermia information campaign:

1. The educational process should start at the top with an "elite" audience of Coast Guard and state boating officials, national safety officials, etc., because these are the sources boaters trust in cases of conflicting information.
2. Formal boating courses cannot be relied on to inform large masses of recreational boaters. Some sort of indirect, impersonal contact through media is needed to reach anywhere near 100 percent of the boaters at risk.

3. The commercial sector has a greater need for "hands-on" training and interpersonal communication in a workshop, in-service training-type environment.
4. National activities should be coordinated with existing local efforts and funding sources within the private sector should be explored and cultivated, to extend the range of Coast Guard activities.
5. No materials should be distributed blindly without some way to monitor their use and evaluate their impact.
6. Coast Guard personnel may be trained and evaluated through existing channels to reduce the occurrence of hypothermia within their ranks and to expand the size of the elite group.

8.0 REFERENCES

1. Harnett, R.M. and M.G. Bijlani, "The Involvement of Cold Water in Recreational Boating Accidents," Final Report Contract Number DOT-CG-72074-A, Clemson University, Clemson, S.C., April 30, 1979.
2. Ecker, W. J. Cmdr., "A Safety Analysis of Fishing Vessel Casualties," presented at the 66th National Safety Congress and Exposition, Oct. 2-5, 1978.
3. Lerbinger, Otto, Designs for Persuasive Communication, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1972.
4. Recreational Boating in the Continental United States in 1973 and 1976: The Nationwide Boating Survey, Report No. CG-B-003-78, U.S. Department of Transportation, U.S. Coast Guard, Washington, D.C., March, 1978.
5. Statistics of Casualties, 1978 (and 1977, 1976, 1975, 1974), U.S. Department of Transportation, U.S. Coast Guard, Office of Merchant Marine Safety, Washington, D.C.
6. Read, Hadley, Communication: Methods for All Media, University of Illinois Press, Urbana, Ill., 1972.
7. Robertson, Leon S., "The Great Seat Belt Campaign Flop," in Journal of Communication, Autumn 1976, pp. 41-45.
8. Gardner, James E., Safety Training for the Supervisor, Addison-Wesley Publishing Co., Reading, Mass.
9. Sager, E., K. Geissler, B. Hayes, and J. Berman, Educational Alternatives for Boating Safety Programs, Report No. CG-D-53-78, U.S. Department of Transportation, U.S. Coast Guard, Washington, D.C., May, 1978.
10. Fleischer, G.A., "A Study of the Effectiveness of a Radio-TV Campaign on Safety Belt Use," Journal of Safety Research, March, 1973, pp. 3-11.
11. Bartholow, L., U.S. Department of Commerce, Maritime Administration (personal communication).
12. Ohrbach, M., U.S. Department of Commerce, National Marine Fisheries Service anthropologist (personal communication).
13. Roberts, K., Louisiana State University, Sea Grant Marine Advisory Program (personal communication).
14. Newsletter, National Council of Fishing Vessel Safety and Insurance, Fishing Vessel Safety Center, University of Washington, Seattle, Wash., Vol. 2, No. 2, May 1979.

15. Harnett, R.M., E.M. O'Brien, F.R. Sias, and J.R. Pruitt, "Experimental Evaluations of Selected Immersion Hypothermia Protection Equipment," Final Report Contract Number DOT-CG-72074-A, Clemson University, Clemson, S.C., October 12, 1979.
16. Baker, E.R., IV, R.M. Harnett, and J.L. Ringuest, "An Evaluation of Human Thermal Models for the Study of Immersion Hypothermia Protection Equipment," Final Report Contract Number DOT-CG-72074-A, Clemson University, Clemson, S.C., October 12, 1979.
17. Harnett, R.M., E.M. O'Brien, F.R. Sias, and J.R. Pruitt, "An Experimental Evaluation of Selected Rewarming Therapies for Treatment of Profound Accidental Hypothermia," Final Report Contract Number DOT-CG-72074-A, Clemson University, Clemson, S.C., August 27, 1979.

APPENDIX A

**TV STATIONS IN HYPOTHERMIA
HIGH RISK AREAS**

This appendix consists of two lists based on information in Broadcasting Yearbook 1979, Sol Talshoff, Editor, Broadcasting Publications, Inc. Washington, D. C. The first is organized by "Areas of Dominant Influence" (markets) within each of the major high-risk regions identified in Figure 5. The markets are ranked in order of decreasing number of TV households reached. All TV stations which are affiliated with one of the three major commercial networks (ABC, CBS or NBC) are listed for each market. An example of the information in this list is the following.

	Region	Number of TV Households in region
	<u>NEW ENGLAND:</u>	3,854,600
Market Name →	<u>Boston, MA:</u>	1,788,300
	Number of TV Households in market	
TV Station Call Letters	WBZ - Boston, MA (NBC)	Network Affiliation
	Geographical location of TV station	

The second list in this appendix shows the mailing addresses of the TV stations. They are organized by state and region.

ALASKA : 64,600

Anchorage, AL: 64,600

KENI - Anchorage, AL (NBC)
KIVA - Anchorage, AL (CBS)
KIMO - Anchorage, AL (ABC)

NEW ENGLAND: 3,854,600

Boston, MA: 1,788,300

WBZ - Boston, MA (NBC)
WCVB - Boston, MA (ABC)
WNAC - Boston, MA (CBS)

Hartford-New Haven, CT: 670,400

WFSB - Hartford, CT (CBS)
WTNH - New Haven, CT (ABC)
WATR - Waterbury, CT (NBC)
WVIT - New Britain, CT (NBC)

Providence, RI: 559,700

WTEV - New Bedford, MA (CBS)
WJAR - Providence, RI (NBC)
WPRI - Providence, RI (ABC)

Portland-Poland Spring, ME: 267,300

WCSH - Portland, ME (NBC)
WMTW - Poland Spring, ME (ABC)
WGAN - Portland, ME (CBS)

Springfield, MA: 219,400

WWLP - Springfield, MA (NBC)
WHYN - Springfield, MA (ABC)

Burlington, VT-Plattsburgh, NY: 208,000

WCAX - Burlington, VT (CBS)
WPTZ - North Pole(Plattsburgh), NY (NBC)
WEZF - Burlington, VT (ABC)

Bangor, ME: 112,800

WLBZ - Bangor, ME (NBC)
WABI - Bangor, ME (CBS)
WVII - Bangor, ME (ABC)

Presque Isle, ME: 28,700

* WAGM - Presque Isle, ME CBS(ABC-NBC)

MID-ATLANTIC: 18,885,600

New York, NY: 6,375,500

WCBS - New York, NY (CBS)
WNBC - New York, NY (NBC)
WABC - New York, NY (ABC)

Philadelphia, PA: 2,364,000

KYW - Philadelphia, PA (NBC)
WPVI - Philadelphia, PA (ABC)
WCAU - Philadelphia, PA (CBS)
WCMC - Wildwood, NJ (NBC)

Washington, DC: 1,363,900

WRC - Washington, DC (NBC)
WJLA - Washington, DC (ABC)
WDVM - Washington, DC (CBS)
WHAG - Hagerstown, MD (NBC)

Pittsburgh, PA: 1,098,900

KDKA - Pittsburgh, PA (CBS)
WTAE - Pittsburgh, PA (ABC)
WIIK - Pittsburgh, PA (NBC)

Baltimore, MD: 797,500

WMAR - Baltimore, MD (CBS)
WBAL - Baltimore, MD (NBC)
WJZ - Baltimore, MD (ABC)

Buffalo, NY: 624,200

WGR - Buffalo, NY (NBC)
WIVB - Buffalo, NY (CBS)
WKBW - Buffalo, NY (ABC)

Charlotte, NC: 530,900

WBTB - Charlotte, NC (CBS)
WSOC - Charlotte, NC (ABC)
WRET - Charlotte, NC (NBC)

Greenville-Spartanburg, SC -

Asheville, NC: 504,800

WFBC - Greenville, SC (NBC)
WSPA - Spartanburg, SC (CBS)
WLOS - Asheville, NC (ABC)
WAIM - Anderson, SC ABC (CBS)

Wilkes Barre-Scranton, PA: 456,100

WNEP - Scranton, PA (ABC)
WDAU - Scranton, PA (CBS)
WBRE - Wilkes Barre, PA (NBC)

Raleigh-Durham, NC: 451,800

WRAL - Raleigh, NC (ABC)
WTVD - Durham, NC (CBS)
WPTF - Durham, NC (NBC)

Albany-Schenectady-Troy, NY: 437,200

WRGB - Schenectady, NY (NBC)
WTEN - Albany, NY (ABC)
WAST - Albany, NY (CBS)

Harrisburg-York-Lancaster-

Lebanon, PA: 430,800

WGAL - Lancaster, PA (NBC)
WLYH - Lancaster, PA (CBS)
WHP - Harrisburg, PA (CBS)
WTPA - Harrisburg, PA (ABC)
WSBA - York, PA (CBS)

Norfolk-Portsmouth-Newport News-
Hampton, VA: 429,000

WTAR - Norfolk, VA (CBS)
WAVY - Portsmouth, VA (NBC)
WVEC - Hampton, VA (ABC)

Greensboro-Winston Salem-High
Point, NC: 397,600

WFMY - Greensboro, NC (CBS)
WGHP - High Point, NC (ABC)
WXII - Winston-Salem, NC (NBC)

Richmond, VA: 381,600

WTVR - Richmond, VA (CBS)
WXEX - Petersburg, VA (ABC)
WWTB - Richmond, VA (NBC)

Syracuse, NY: 340,800

WSYR - Syracuse, NY (NBC)
WTVH - Syracuse, NY (CBS)
WIXT - Syracuse, NY (ABC)

Rochester, NY: 323,200

WROC - Rochester, NY (NBC)
WHEC - Rochester, NY (CBS)
WOKR - Rochester, NY (ABC)

Roanoke-Lynchburg, VA: 319,300

WDBJ - Roanoke, VA (CBS)
WSLS - Roanoke, VA (NBC)
WSET - Lynchburg, VA (ABC)

Johnstown-Altoona, PA: 287,500

WJAC - Johnstown, PA (NBC)
WTAJ - Altoona, PA (CBS)
WJNL - Johnstown, PA (CBS)
WCPC - Altoona, PA (ABC)

Greenville-New Bern-Washington,

NC: 196,000

WITN - Washington, NC (NBC)
WNCT - Greenville, NC (CBS)
WCTI - New Bern, NC (ABC)

Binghamton, NY: 145,000

WBNG - Binghamton, NY (CBS)
WBJA - Binghamton, NY (ABC)
WICZ - Binghamton, NY (NBC)

Wilmington, NC: 135,300

WWAY - Wilmington, NC (ABC)
WECT - Wilmington, NC NBC (CBS)

Erie, PA: 132,600

WICU - Erie, PA (NBC)
WJET - Erie, PA (ABC)
WSEE - Erie, PA (CBS)

Utica, NY: 102,400

WKTV - Utica, NY (NBC)
WUTR - Utica, NY (ABC)

Elmira, NY: 81,300

WSYE - Elmira, NY (NBC)
WENY - Elmira, NY (ABC)

Watertown-Carthage, NY: 76,700

WWNY - Carthage, NY CBS (ABC)

Salisbury, MD: 69,900

WBOC - Salisbury, MD CBS (ABC-NBC)

Harrisonburg, VA: 31,800

WHSV - Harrisonburg, VA (ABC)

SOUTH: 11,717,500

Dallas-Fort Worth, TX: 1,115,300

KDFW - Dallas, TX (CBS)
KXAS - Fort Worth, TX (NBC)
WFAA - Dallas, TX (ABC)
KTVT - Fort Worth, TX (Ind)

Houston, TX: 1,009,500

KPRC - Houston, TX (NBC)
KHOU - Houston, TX (CBS)
KTRK - Houston, TX (ABC)

Miami, FL: 946,900

WTVJ - Miami, FL (CBS)
WCKT - Miami, FL (ABC)
WPLG - Miami, FL (ABC)

Tampa-St. Petersburg, FL: 875,900

WFLA - Tampa, FL, (NBC)
WLCY - Largo, FL (ABC)
WTVT - Tampa, FL (CBS)
WXLT - Sarasota, FL (ABC)

Nashville, TN: 575,200

WNGE - Nashville, TN (ABC)
WSM - Nashville, TN (NBC)
WTVF - Nashville, TN (CBS)

Memphis, TN: 524,000

WREG - Memphis, TN (CBS)
WMC - Memphis, TN (NBC)
WHBQ - Memphis, TN (ABC)

New Orleans, LA: 511,400

WWL - New Orleans, LA (CBS)
WDSU - New Orleans, LA (NBC)
WVUE - New Orleans, LA (ABC)

Orlando-Daytona Beach, FL: 486,100

WESH - Daytona Beach, FL (NBC)
WDBO - Orlando, FL (CBS)
WFTV - Orlando, FL (ABC)

Birmingham, AL: 421,500

WBRC - Birmingham, AL (ABC)
WAPI - Birmingham, AL (NBC)
WBMG - Birmingham, AL (CBS)

San Antonio, TX: 406,700

KMOL - San Antonio, TX (NBC)
KENS - San Antonio, TX (CBS)
KSAT - San Antonio, TX (ABC)

Shreveport, LA-Texarkana, TX: 360,900

KTBS - Shreveport, LA (ABC)
KTAL - Texarkana, TX (NBC)
KSLA - Shreveport, TX (CBS)

Knoxville, TN: 349,200

WATE - Knoxville, TN (NBC)
WBIR - Knoxville, TN (CBS)
WTVK - Knoxville, TN (ABC)

Mobile, AL-Pensacola, FL: 337,700

WEAR - Pensacola, FL (ABC)
WKRQ - Mobile, AL (CBS)
WALA - Mobile, AL (NBC)

Jacksonville, FL: 324,700

WJXT - Jacksonville, FL (CBS)
WTLV - Jacksonville, FL (NBC)
WJKS - Jacksonville, FL (ABC)

Chattanooga, TN: 283,600

WRCB - Chattanooga, TN (NBC)
WTVC - Chattanooga, TN (ABC)
WDEF - Chattanooga, TN (CBS)

West Palm Beach, FL: 244,300

WPTV - West Palm Beach, FL (NBC)
WPEC - West Palm Beach, FL (ABC)
WTVX - Ft. Pierce, FL, (CBS)

Jackson, MS: 239,400

WLBT - Jackson, MS (NBC)
WJTV - Jackson, MS (CBS)
WAPT - Jackson, MS (ABC)

Baton Rouge, LA: 194,300

WBRZ - Baton Rouge, LA (ABC)
WAFB - Baton Rouge, LA (CBS)
WRBT - Baton Rouge, LA (NBC)

Huntsville-Decatur-

Florence, AL: 191,000
WOWL - Florence, AL (NBC)
WHNT - Huntsville, AL (CBS)
WAAY - Huntsville, AL (ABC)
WAFF - Huntsville, AL (NBC)

Waco-Temple, TX: 179,700

KCEN - Temple, TX NBC (CBS-ABC)
KWTX - Waco, TX (ABC)

Monroe, LA-EI Dorado, AR: 170,900

KNOE - Monroe, LA (CBS)
KTVE - EI Dorado, AR (ABC)
KLAA - West Monroe, LA (NBC)

Lafayette, LA: 151,500

KATC - Lafayette, LA (ABC)
KLFY - Lafayette, LA (CBS)

Montgomery, AL: 147,700

WSFA - Montgomery, AL (NBC)
WCOV - Montgomery, AL (CBS)
WKAB - Montgomery, AL (ABC)

Beaumont-Port Arthur, TX: 146,900

KJAC - Port Arthur, TX (NBC)
KFDM - Beaumont, TX (CBS)
KBMT - Beaumont, TX (ABC)

Corpus Christi, TX: 133,000

KIII - Corpus Christi, TX (ABC)
KRIS - Corpus Christi, TX (NBC)
KZTV - Corpus Christi, TX, (CBS)
KXIX - Victoria, TX (ABC)

Columbus-Tupelo, MS: 131,100

WCBI - Columbus, MS (ABC)
WTWV - Tupelo, MS (NBC)

McAllen-Brownsville, TX: 126,500

KGBT - Harlingen, TX CBS (NBC)
KRGV - Weslaco, TX (ABC)

Tallahassee, FL: 124,200

WCTV - Thomasville, GA (CBS)
WECA - Tallahassee, FL (ABC)

Fort Myers, FL: 120,800

WINK - Fort Myers, FL (CBS)
WBBH - Fort Myers, FL (NBC)
WEVU - Naples, FL (ABC)

Abilene-Sweetwater, TX: 97,100

KRBC - Abilene, TX (NBC)
KTXS - Sweetwater, TX, ABC (CBS)

Dothan, AL: 90,900

WTVY - Dothan, AL (CBS)
WDHN - Dothan, AL (ABC)

Tyler, TX: 89,400

KLTV - Tyler, TX, ABC (NBC)

Laurel-Hattiesburg, MS: 73,000

WDAM - Laurel-Hattiesburg, MS (NBC)

Meridian, MS: 68,100

WTOK - Meridian, MS, CBS (ABC)
WHTV - Meridian, MS, NBC (ABC)

Alexandria, LA: 64,400

KALB - Alexandria, LA, NBC (ABC)

Lake Charles, LA: 62,700

KPLC - Lake Charles, LA, (NBC)

Gainesville, FL: 53,500

WCJB - Gainesville, FL, (ABC)

Panama City, FL: 51,200

WJHG - Panama City, FL, (ABC)
WMBB - Panama City, FL, (NBC)

Biloxi-Gulfport-Pascagoula,

MS: 49,000
WLOX - Biloxi, MS (ABC)

Tuscaloosa, AL: 39,500

WCFT - Tuscaloosa, AL (CBS)

Jackson, TN: 38,600

WBBJ - Jackson TN (ABC)

Anniston, AL: 37,800

WHMA - Anniston, AL (CBS)

Greenwood-Greenville, MS: 36,000

WABG - Greenwood, MS (ABC)

Victoria, TX: 19,100

KXIX - Victoria, TX (ABC)

Selma, AL: 17,300

WSLA - Selma, AL (CBS)

GREAT LAKES: 13,584,600

Chicago, IL: 2,806,600

WBBM - Chicago, IL (CBS)
WMAQ - Chicago, IL (NBC)
WLS - Chicago, IL (ABC)

Detroit, MI: 1,590,700

WJBK - Detroit, MI (CBS)
WDIV - Detroit, MI (NBC)
WXYZ - Detroit, MI (ABC)

Cleveland, OH: 1,304,200

WKYC - Cleveland, OH (NBC)
WEWS - Cleveland, OH (ABC)
WJKW - Cleveland, OH (CBS)
WAKR - Akron, OH (ABC)

Minneapolis-St. Paul, MN: 962,800

WCCO - Minneapolis, MN (CBS)
KSTP - St. Paul, MN (NBC)
KMSP - Minneapolis, MN (ABC)

Milwaukee, WI: 638,700

WTMJ - Milwaukee, WI (NBC)
WITI - Milwaukee, WI (CBS)
WISN - Milwaukee, WI (ABC)

Cincinnati, OH: 635,300

WLWT - Cincinnati, OH (NBC)
WCPO - Cincinnati, OH (CBS)
WKRC - Cincinnati, OH (ABC)

Columbus, OH: 546,200

WCMH - Columbus, OH (NBC)
WTVN - Columbus, OH (ABC)
WBNS - Columbus, OH (CBS)

Grand Rapids-Kalamazoo-

Battle Creek, MI: 472,900

WKZO - Kalamazoo, MI (CBS)
WOTV - Grand Rapids, MI (NBC)
WZZM - Grand Rapids, MI (ABC)
WUHQ - Battle Creek, MI (ABC)

Dayton, OH: 432,300

WDTN - Dayton, OH (NBC)
WHIO - Dayton, OH (CBS)
WKEF - Dayton, OH (ABC)

Flint-Saginaw-Bay City, MI: 385,500

WNEM - Bay City, MI (NBC)
WJRT - Flint, MI (ABC)

Toledo, OH: 381,400

WTOL - Toledo, OH (CBS)
WSPD - Toledo, OH (NBC)
WDHO - Toledo, OH (ABC)

Green Bay, WI: 320,000

WBAY - Green Bay, WI (CBS)
WFRV - Green Bay, WI (NBC)
WLUK - Green Bay, WI (ABC)

Springfield-Decatur-

Champaign, IL: 288,800

WCIA - Champaign, IL (CBS)
WAND - Decatur, IL (ABC)
WICS - Springfield, IL (NBC)

Davenport, Iowa-Rock Island -

Moline, IL: 282,800

WHBF - Rock Island, IL (CBS)
WOC - Davenport, IA (NBC)
WOAD - Moline, IL (ABC)

Paducah, KY-Cape Girardeau,

MO-Harrisburg, IL: 278,000

WSIL - Harrisburg, IL (ABC)
WPSD - Paducah, KY (NBC)
KFVS - Cape Girardeau, MO (CBS)

Youngstown, OH: 251,100

WFMJ - Youngstown, OH (NBC)
WKBN - Youngstown, OH (CBS)
WYTV - Youngstown, OH (ABC)

Peoria, IL: 211,800

WRAU - Peoria, IL (ABC)
WEEK - Peoria, IL (NBC)
WMBD - Peoria, IL (CBS)

Lansing, MI: 196,900

WJIM - Lansing, MI (CBS)
WILX - Onondaga, MI (NBC)

Rockford, IL: 180,900

WREX - Rockford, IL (ABC)
WTVO - Rockford, IL (NBC)
WIFR - Freeport, IL (CBS)

Madison, WI: 175,200

WISC - Madison, WI (CBS)

WMTV - Madison, WI (NBC)

WKOW - Madison, WI (ABC)

Duluth, MN-Superior, WI: 165,400

KDAL - Duluth, MN (CBS)

KBJR - Superior, WI (NBC)

WDIO - Duluth, MN (ABC)

Wheeling, WV - Steubenville, OH: 156,800

WTRF - Wheeling, WV, NBC (ABC)

WSTV - Steubenville, OH, CBS (ABC)

Traverse City-Cadillac, MI: 149,300

WPBN - Traverse City, MI (NBC)

WTV - Cadillac, MI (CBS)

WGTU - Traverse City, MI (ABC)

LaCrosse-Eau Claire, WI: 140,000

WKBT - La Crosse, WI (CBS)

WEAU - Eau Claire, WI (NBC)

WXOW - La Crosse, WI (ABC)

Wausau-Rhineland, WI: 134,100

WSAU - Wausau, WI (CBS)

WAOW - Wausau, WI (ABC)

WAEO - Rhineland, WI (NBC)

Rochester, MN-Mason City, IA-

Austin, MN: 132,800

KIMT - Mason City, IA (CBS)

KAAL - Austin, MN (ABC)

KTTC - Rochester, MN (NBC)

Quincy, IL-Hannibal, MO: 117,900

KHQA - Hannibal, MO (CBS)

WGEM - Quincy, IL (NBC)

Alexandria, MN: 100,300

KCMT - Alexandria, MN, NBC (ABC)

Marquette, MI: 51,200

WLUC - Marquette, MI, CBS (ABC-NBC)

Mankato, MN: 45,900

KEYC - Mankato, MN (CBS)

Lima, OH: 35,100

WLIO - Lima, OH, NBC (ABC)

Alpena, MI: 13,700

WBKB - Alpena, MI, (CBS)

WEST: 10,844,100

Los Angeles, CA: 3,882,800

KNXT - Los Angeles, CA (CBS)
KNBC - Los Angeles, CA (NBC)
KABC - Los Angeles, CA (ABC)

San Francisco, CA: 1,830,700

KRON - San Francisco, CA (NBC)
KPIX - San Francisco, CA (CBS)
KGO - San Francisco, CA (ABC)

Seattle-Tacoma, WA: 854,000

KOMO - Seattle, WA (ABC)
KING - Seattle, WA (NBC)
KIRO - Seattle, WA (CBS)

Portland, OR: 672,500

KATU - Portland, OR (ABC)
KOIN - Portland, OR (CBS)
KGW - Portland, OR (NBC)
KTVZ - Bend, OR, NBC (CBS)

Sacramento-Stockton, CA: 648,500

KCRA - Sacramento, CA (NBC)
KXTV - Sacramento, CA (CBS)
KQVR - Stockton, CA (ABC)

San Diego, CA: 624,500

KFMB - San Diego, CA (CBS)
KGTV - San Diego, CA (ABC)
KCST - San Diego, CA (NBC)

Phoenix, AZ: 540,300

KTVK - Phoenix, AZ (ABC)
KOOL - Phoenix, AZ (CBS)
KTAR - Mesa, AZ (NBC)

Fresno, CA: 304,100

KMJ - Fresno, CA (NBC)
KFSN - Fresno, CA (CBS)
KJEO - Fresno, CA (ABC)

Spokane, WA: 282,300

KREM - Spokane, WA (CBS)
KXLY - Spokane, WA (ABC)
KHQ - Spokane, WA (NBC)

Austin, TX: 190,700

KTBC - Austin, TX (CBS)
KVUE - Austin, TX (ABC)
KTVV - Austin, TX (NBC)

Salinas-Monterey, CA: 154,100

KSBW - Salinas, CA (NBC)
KNTV - San Jose, CA (ABC)
KMST - Monterey, CA (CBS)

Santa Barbara-Santa Maria-

San Luis Obispo, CA: 150,900

KEYT - Santa Barbara, CA (ABC)
KSBY - San Luis Obispo, CA (NBC)
KCOY - Santa Maria, CA (CBS)

Yakima, WA: 139,000

KNDO - Yakima, WA (NBC)
KIMA - Yakima, WA (CBS)
KAPP - Yakima, WA (ABC)

Eugene, OR: 136,200

KEZI - Eugene, OR, ABC (CBS)
KVAL - Eugene, OR (NBC)

Boise, ID: 122,800

KBCI - Boise, ID (CBS)
KIVI - Nampa, ID (ABC)
KTVB - Boise, ID (NBC)

Chico-Redding, CA: 114,500

KRCR - Redding, CA ABC (NBC)
KHSL - Chico, CA CBS (NBC)

Medford, OR: 96,900

KOBI - Medford, OR ABC (CBS)
KTVL - Medford, OR, NBC (ABC)

Eureka, CA: 48,500

KIEM - Eureka, CA, CBS (NBC-ABC)
KVIQ - Eureka, CA, ABC (NBC)

Bellingham, WA: 32,300

KVOS - Bellingham, WA (CBS)

Flagstaff, AZ: 18,500

KOAI - Flagstaff, AZ (NBC)

Maine

- * WABI-TV
35 Hildreth St.
Bangor, ME 04401
- WLBZ-TV
Box 934
Bangor, ME 04401
- WVII-TV
41 Farm Rd.
Bangor, ME 04401
- * WCSH-TV
One Congress Square
Portland, ME 04101
- WGAN-TV
Broadcast Center
Northport Plaza
Portland, ME 04104
- WMTW-TV
638 Congress St.
Portland, ME 04101
- * WAGM-TV
Box 1149
Presque, ME 04769

Massachusetts

WCDC-TV (Adams, MA)
341 Northern Blvd.
Albany, NY 12204

WBZ-TV
1170 Soldiers Field Rd.
Boston, MA 02134

WCVB-TV
5 TV Place
Needham Br.
Boston, MA 02192

- * WNAC-TV
Government Center
Boston, MA 02146

WSBK-TV
83 Leo Birmingham Pkwy
Boston, MA 02135

- * WHYN-TV
1300 Liberty St.
Springfield, MA 01101

WWLP-TV
Box 2200
Springfield, MA 01101

New Hampshire

- * WNNE-TV (Hanover, NH)
Box 906
White River Junction, VT 05001

- * WMUR-TV
1819 Elm St.
Manchester, NH 03104

* Top-rated stations in their markets

Vermont

* WCAV-TV
Box 608
Burlington, VT 05401

WEZF-TV
Box 22
Burlington, VT 05401

Connecticut

* WFSB-TV
Broadcast House
3 Constitution Plaza
Hartford, CT 06115

WTNH-TV
Box 1859
New Haven, CT 06508

WATR-TV
79 Baldwin Ave.
Waterbury, CT 06706

Rhode Island

* WJAR-TV
176 Weybosset St.
Providence, RI 02903

WPRI-TV
25 Catamore Blvd.
E. Providence, RI 02914

WTEV-TV
Regency East
Providence, RI 02903

New York

WAST-TV
Box 4035
Albany, NY 12204

WRGB-TV
1400 Balltown Rd.
Schenectady, NY 12309

* WTEN-TV
341 Northern Blvd.
Albany, NY 12204

* WBNG-TV
50 Front St.
Binghamton, NY 13902

WICZ-TV
4600 Vestal Pkwy. E.
Binghamton, NY 13902

WMGC-TV
4600 Vestal Pkwy E.
Binghamton, NY 13902

* WIVB-TV
2077 Elmwood Ave.
Buffalo, NY 14207

WGR-TV
259 Delaware Ave.
Buffalo, NY 14202

WKBW-TV
1420 Main St.
Buffalo, NY 14209

WENY-TV
Box 208
Elmira, NY 14902

WSYE-TV
Box 314
Elmira, NY 14902

WABC-TV
1330 Ave. of Americas
New York, NY 10019

WCBS-TV
524 W. 57 St.
New York, NY 10019

* WNBC-TV
30 Rockefeller Plaza
New York, NY 10020

WPTZ-TV
357 Cornelia St.
Plattsburgh, NY 12901

* Top-rated stations in their markets

* WHEC-TV
191 East Ave.
Rochester, NY 14604

WOKR-TV
4225 West Henrietta Rd.
Rochester, NY 14623

WROC-TV
201 Humboldt St.
Rochester, NY 14610

WIXT-TV
Box 9
Syracuse, NY 13214

* WSYR-TV
1030 James St.
Syracuse, NY 13203

WTVH-TV
980 James St.
Syracuse, NY 13203

* WKTV-TV
Box 2
Utica, NY 13503

WUTR-TV
Box 20
Utica, NY 13503

* WWNY-TV
Box 211
Watertown, NY 13601

New Jersey

WNJU-TV
1020 Broad St
Newark, NJ 07102

WTVG-TV
416 Eagle Rock Ave.
West Orange, NJ 07052

WCMC-TV
3010 New Jersey Ave.
Wildwood, NJ 08260

Pennsylvania

WOPC-TV
Box 609
Altoona, PA 16603

WTAJ-TV
Commerce Park
Altoona, PA 16603

* WICU-TV
3514 State St.
Erie, PA 16508

WJET-TV
8700 Waterford Pike Rd.
Erie, PA 16509

WSEE-TV
1220 Peach St.
Erie, PA 16501

WHP-TV
Box 1507
Harrisburg, PA 17105

WTPA-TV
Box 2775
Harrisburg, PA 17105

* WJAC-TV
Hickory Lane
Johnstown, PA 15905

WJNL-TV
341 Lincoln St.
Johnstown, PA 15901

* WGAL-TV
Lincoln Highway W.
Lancaster, PA 17604

WLYH-TV
1126 Park City Center
Lancaster, PA 17601

KYW-TV
Independence Mall East
Philadelphia, PA 19106

* Top-rated stations in their markets

WCAU-TV
City Line & Monument Aves.
Philadelphia, PA 19131

WKBS-TV
3201 S. 26th St.
Philadelphia, PA 19145

WPHL-TV
5001 Wynnefield Ave.
Philadelphia, PA 19131

* WPVI-TV
4100 City Line Ave.
Philadelphia, PA 19131

KDKA-TV
1 Gateway Center
Pittsburgh, PA 15222

WTIC-TV
341 Rising Main Ave.
Pittsburgh, PA 15214

* WTAE-TV
400 Ardmore Blvd.
Pittsburgh, PA 15230

WBRE-TV
62 S. Franklin St.
Wilkes-Barre, PA 18703

WDAU-TV
1000 Wyoming Ave.
Scranton, PA 18509

* WNEP-TV
Wilkes-Barre Scranton Airport
Avoca, PA 18641

WSBA-TV
Box 1868
York, PA 17405

Maryland

* WBAL-TV
3800 Hooper Ave.
Baltimore, MD 21211

WJZ-TV
TV Hill
Baltimore, MD 21211

WMAR-TV
6400 York Rd.
Baltimore, MD 21212

WHAG-TV
On the Square
Hagerstown, MD 21740

* WBOC-TV
Radio-TV Park
Salisbury, MD 21801

District of Columbia

WRC-TV
4001 Nebraska Ave., N.W.
Washington, DC 20016

WJLA-TV
4461 Connecticut Ave., N.W.
Washington, DC 20008

WDVM-TV
40th and Brandywine St., N.W.
Washington, DC 20016

Virginia

WCYB-TV
Box 1009
Bristol, VA 24201

WVIR-TV
Box 751
Charlottesville, VA 22902

WHFV-TV
Television Park
Hudgins Rd.
Fredericksburg, VA 22401

* WHSV-TV
Box TV 3
Harrisonburg, VA 22801

* Top-rated stations in their markets

WSET-TV
Box 238
Lynchburg, VA 24505

WAVY-TV (Norfolk, VA)
801 Wavy St.
Portsmouth, VA 23704

* WTAR-TV
720 Boush St.
Norfolk, VA 23510

WVEC-TV (Norfolk, VA)
Box 400
Hampton, VA 23669

* WTVR-TV
3301 W. Broad St.
Richmond, VA 23230

WWTB-TV
Box 12
Richmond, VA 23201

WXEX-TV
Box 888
Richmond, VA 23207

* WDBJ-TV
Box 7
Roanoke, VA 24022

WSLS-TV
Box 2161
Roanoke, VA 24009

North Carolina

WBTV-TV
One Julian Price Pl.
Charlotte, NC 28208

WCCB-TV
1 TV Pl.
Charlotte, 28205

WRET-TV
Box 12665
Charlotte, NC 28205

WSOC-TV
Box 2536
Charlotte, NC 28234

WFMY-TV
Box TV2
Greensboro, NC 27420

WCTI-TV (Greenville, NC)
Box 2325
New Bern, NC 28560

WITN-TV (Greenville, NC)
Box 468
Washington, NC 27889

WNCT-TV
Box 898
Greenville, NC 27834

* WGHP-TV
400 N. Main St.
High Point, NC 27260

WRAL-TV
Box 12000
Raleigh, NC 27605

WPTF-TV
Box 3540
Durham, NC 27707

* WTVD-TV
Box 2009
Durham, NC 27702

* WECT-TV
322 Shipyard Blvd.
Wilmington, NC 28403

WWAY-TV
Box 2068
Wilmington, NC 28401

WXII-TV
Box 11847
Winston-Salem, NC 27106

South Carolina

WAIM-TV
321 Kingsley Rd.
Anderson, SC 29621

WCBD-TV
Box 879
Charleston, SC 29402

* Top-rated stations in their markets

WCIV-TV (Charleston)
Hwy 703
Mt. Pleasant, SC 29464

* WCSC-TV
Box 186
Charleston, SC 29402

* WIS-TV
1111 Bull St.
Columbia, SC 29202

WLTX-TV
Drawer M
Columbia, SC 29250

WOLO-TV
Box 4217
Columbia, SC 29240

* WBTW-TV
TV Road
Florence, SC 29501

WFBC-TV
Box 788
Greenville, SC 29602

WLOS-TV (Greenville, SC)
Box 2150
288 Macon Ave.
Asheville, NC 28802

WSPA-TV (Greenville, SC)
Box 1717
Spartanburg, SC 29304

Tennessee

WDEF-TV
3300 Broad St.
Chattanooga, TN 37408

* WRCB-TV
900 Whitehall Rd.
Chattanooga, TN 37405

WTVC-TV
Box 1150
Chattanooga, TN 37401

* WBBJ-TV
Box 2387
Jackson, TN 38301

* Top-rated stations in their markets

WJHL-TV
Box 1130
Johnson City, TN 37601

WKPT-TV
222 Commerce St.
Kingsport, TN 37660

WATE-TV
Box 2349
1306 N.E. Broadway
Knoxville, TN 37901

* WBIR-TV
1513 Hutchison Ave.
Knoxville, TN 37917

WTVK-TV
Box 1388
Knoxville, TN 37901

WHBQ-TV
485 S. Highland Ave.
Memphis, TN 38111

WMC-TV
1960 Union Ave.
Memphis, TN 38104

* WREG-TV
Chanel 3 Dr.
Memphis, TN 38103

WNGE-TV
441 Murfreesboro Rd.
Nashville, TN 37210

WSM-TV
Box 100
Nashville, TN 37202

* WTVF-TV
474 James Robertson Pkwy
Nashville, TN 37219

Georgia

* WALB-TV
Box 3130
Albany, GA 31706

WAGA-TV
Box 4207
Atlanta, GA 30302

WATL-TV 1800 Peachtree Rd. Atlanta, GA 30309	* WSAV-TV Box 2429 Savannah, GA 31402
WSB-TV 1601 W. Peachtree St. N.E. Atlanta, GA 30309	WTOG-TV Box 8086 Savannah, GA 31402
* WTCG-TV 1018 W. Peachtree St. N.W. Atlanta, GA 30309	<u>Florida</u>
WXIA-TV 1611 W. Peachtree St. N.E. Atlanta, GA 30309	WBBH-TV 3719 Central Ave. Ft. Myers, FL 33901
WATU-TV (Augusta, GA) Box 6847 North Augusta, SC 29841	* WINK-TV Box 1060 Ft. Myers, FL 33902
* WJBF-TV Box 1404 Augusta, GA 30903	WTVX-TV Rt. 1, Box 313 Ft. Pierce, FL 33450
WRDW-TV Drawer 1212 Augusta, GA 30903	WCJB-TV Drawer 13414 Gainesville, FL 32604
WRBL-TV Box 270 Columbus, GA 31902	WJKS-TV Box 17000 Jacksonville, FL 32216
* WTVM-TV Box 1848 Columbus, GA 31902	* WJXT-TV Box 5270 Jacksonville, FL 32207
WYEA-TV Box 6389 Columbus, GA 31907	WTLV-TV Box TV-12 Jacksonville, FL 32231
WCWB-TV Box 4328 Macon, GA 31208	WCKT-TV 1401 79th St., Causeway Miami, FL 33141
* WMAZ-TV Box 5008 Macon, GA 31208	WPLG-TV 3900 Biscayne Blvd. Miami, FL 33137
WJCL-TV Box 13646 Savannah, GA 31406	* WTVJ-TV 316 N. Miami Ave. Miami, FL 33128
	WEVU-TV (Naples, FL) Box N Bonita Springs, FL 33923

* Top-rated stations in their markets

AD-A083 716

CLEMSON UNIV SC

F/6 13/10

REQUIREMENTS FOR INFORMATION/EDUCATION PROGRAMS ON HYPOTHERMIA.(U)

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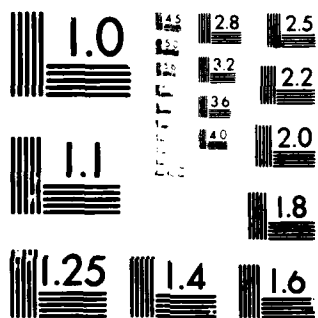


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DATE

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DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

KSLA-TV
Box 4812
Shreveport, LA 71104

KTAL-TV
3150 N. Market St.
Shreveport, LA 71107

* KTBS-TV
312 Kings Highway
Box 4367
Shreveport, LA 71104

KLAA-TV
701 Parkwood Dr.
West Monroe, LA. 71291

Texas

* KRBC-TV
4510 S. 14th St.
Abilene, TX 79604

KTXS-TV
Box 2997
Abilene, TX 79604

KAMR-TV
Box 751
Amarillo, TX 79105

KFDA-TV
Box 1400
Amarillo, TX 79105

* KVII-TV
Box 13000
Amarillo, TX 79101

KTBC-TV
Box 2223
Austin, TX 78767

KTVV-TV
Box 490
Austin, TX 78767

* KVUE-TV
Box 9927
Austin, TX 78766

KBMT-TV
Box 1550
Beaumont, TX 77704

* KFDM-TV
Beaumont, TX 77704

KJAC-TV (Beaumont, TX)
Box 3257
Port Arthur, TX 77640

KWAB-TV
2700 Kentucky Way
Big Spring, TX 79720

WBTX-TV
Drawer 3730
Bryan, TX 77801

KIII-TV
Box 6669
Corpus Christi, TX 78411

KRIS-TV
Box 840
Corpus Christi, TX 78403

* KZTV-TV
Show Room Bldg.
Corpus Christi, TX 78401

KDFW-TV
400 N. Griffin
Dallas, TX 75202

WFAA-TV
Communications Ctr.
Dallas, TX 75202

KDBC-TV
Box 1799
El Paso, TX 79999

* KTSM-TV
801 N. Oregon St.
El Paso, TX 79902

KVIA-TV
Box 12277
El Paso, TX 79912

* KTVT-TV
Box 2495
Fort Worth, TX 76101

KXAS-TV
Box 1780
Fort Worth, TX 76101

* KGBT-TV
Box 711
Harlingen, TX 78550

* KHOU-TV
Box 11
Houston, TX 77001

KPRC-TV
Box 2222
Houston, TX 77001

KTRK-TV
Box 13
Houston, TX 77001

* KGNS-TV
Box 2829
Laredo, TX 78041

KVTV-TV
Box 2013
Laredo, TX 78041

* KCBD-TV
Box 2190
Lubbock, TX 79408

KLBK-TV
7400 University Ave.
Lubbock, TX 79408

KMCC-TV
Box 2805
Lubbock, TX 79408

KTRE-TV
Drawer 729
Lufkin, TX 75901

KMID-TV
Drawer B
Midland, TX 79701

* KMOM-TV (Monahans, TX)
Box 4677
Odessa, TX 79760

KOSA-TV
Box 4186
1211 N. Whitaker
Odessa, TX 79760

KACB-TV
San Angelo, TX 76901

* KCTV-TV
Box 1941
San Angelo, TX 76901

KENS-TV
San Antonio, TX 78299

KMOL-TV
Box 2641
San Antonio, TX 78299

* KSAT-TV
Box 2478
San Antonio, TX 78298

KCEN-TV
Box 188
Temple, TX 87601

KLTV-TV
Box 957
Tyler, TX 75701

KXIX-TV
Box 1879
Victoria, TX 77901

* KWTX-TV
Box 7528
Waco, TX 76710

KRGV-TV
Box 626
Weslaco, TX 78596

KAUZ-TV
Box 2130
Wichita Falls, TX 76307

KFDX-TV
Box 4000
Wichita Falls, TX 76308

* Top-rated stations in their markets

GREAT LAKES

Michigan

* WBKB-TV
Box 35
Alpena, MI 49707

WUHQ-TV
5200 Dickman Road
Battle Creek, MI 49016

* WWTW-TV
Box 627
Cadillac, MI 49601

WTOM-TV (Cheboygan, MI)
Paul Bunyan Bldg.
Traverse City, MI 49684

CBET-TV
Box 9
Detroit, MI 48226

* WJBK-TV (Detroit, MI)
Storer Place
Southfield, MI 48075

WWJ-TV
622 Lafayette Blvd.
Detroit, MI 48231

WXYZ-TV (Detroit, MI)
20777 W. Ten Mile Road
Southfield, MI 48075

WEYI-TV
Box 3265
Saginaw, MI 48605

* WJRT-TV
2302 Lepeer Road
Flint, MI 48503

WNEM-TV
5700 Becker Road
Saginaw, MI 48606

* WOTV-TV
Box B
Grand Rapids, MI 49501

WZZM-TV
Box Z
Grand Rapids, MI 49501

* Top-rated stations in their markets

WKZO-TV
590 W. Maple St.
Kalamazoo, MI 49008

* WJIM-TV
2820 E. Saginaw
Lansing, MI 48904

* WLUC-TV
Box 460
Marquette, MI 49855

WILX-TV (Onondaga, MI)
Box 30380
Lansing, MI 48909

WWUP-TV
Sault Ste. Marie, MI 49684

WGTU-TV
201 E. Front St.
Traverse City, MI 49684

WPBN-TV
Paul Bunyan Bldg.
Traverse City, MI 49684

Ohio

WAKR-TV
853 Copley Road
Akron, OH 44320

* WCPO-TV
500 Central Ave
Cincinnati, OH 45202

WKRC-TV
1906 Highland Ave.
Cincinnati, OH 45219

WLWT-TV
140 W. 9th St.
Cincinnati, OH 45202

* WEWS-TV
3001 Euclid Ave.
Cleveland, OH 44115

WJKW-TV
5800 S. Marginal Rd.
Cleveland, OH 44103

WKYC-TV
1403 E. 6th St.
Cleveland, OH 44114

* WBNS-TV
62 E. Broad St.
Columbus, OH 43215

WCMH-TV
Box 4
Columbus, OH 43216

WTVN-TV
Box 718
753 Harmon Ave.
Columbus, OH 43216

WDTN-TV
4596 Dixie Ave.
Dayton, OH 45401

WHIO-TV
1414 Wilmington Ave.
Dayton, OH 45401

WKEF-TV
1731 Soldiers Home Rd.
Dayton, OH 45418

* WLIO-TV
1424 Rice Ave.
Box 1689
Lima, OH 45805

WSTV-TV
Bcst. Ctr.
Steubenville, OH 43952

WDHO-TV
300 S. Byrne Rd.
Toledo, OH 43615

WSPD-TV
136 Huron St.
Toledo, OH 43604

* WTOL-TV
604 Jackson St.
Toledo, OH 43604

WFMJ-TV
101 W. Boardman St.
Youngstown, OH 44503

* Top-rated stations in their markets

* WKBN-TV
3930 Sunset Blvd.
Youngstown, OH 44501

WYTV-TV
3800 Shady Run Rd.
Youngstown, OH 44502

* WHIZ-TV
Lind Arcade Bldg.
Zanesville, OH 43701

Indiana

WEHT-TV
Box 395
Evansville, IN 47703

WFIE-TV
1115 Mt. Auburn Rd.
Evansville, IN 47712

* WTVW-TV
477 Carpenter St.
Box 7
Evansville, IN 47701

WANE-TV
2915 W. State Blvd.
Fort Wayne, IN 46808

WKJG-TV
2633 W. State Blvd.
Fort Wayne, IN 46808

WPTA-TV
3401 Butler Rd.
Fort Wayne, IN 46808

WISH-TV
1950 N. Meridian St.
Indianapolis, IN 46207

WRTV-TV
1330 N. Meridian St.
Indianapolis, IN 46206

WTHR-TV
1401 N. Meridian St.
Indianapolis, IN 46202

* WTTV-TV
3490 Bluff Rd.
Indianapolis, IN 46217

* WLFI-TV
Box 18
Lafayette, IN 47902

* WNDU-TV
Box 1616
South Bend, IN 46634

WSBT-TV
300 W. Jefferson Blvd.
South Bend, IN 46601

WSJV-TV (South Bend, IN)
Box 1646
Elkhart, IN 46515

WBAK-TV
Box 719
Terre Haute, IN 47808

WTHI-TV
918 Ohio St.
Terre Haute, IN 47808

WTWO-TV
Box 299
Terre Haute, IN 47808

Illinois

* WCIA-TV
509 S. Neil
Champaign, IL 61820

WICD-TV
17 E. University Ave.
Champaign, IL 61820

WBBM-TV
630 N. McClurg Court
Chicago, IL 60611

* WGN-TV
2501 Bradley Pl.
Chicago, IL 60618

WLS-TV
190 N. State St.
Chicago, IL 60601

WMAQ-TV
Merchandise Mart
Chicago, IL 60654

WAND-TV
Box 631
Southside Dr.
Decatur, IL 62525

WSIL-TV
21 W. Poplar St.
Harrisburg, IL 62946

WQAD-TV
3003 Park 16th St.
Moline, IL 61265

WEEK-TV
2907 Springfield Rd.
Peoria, IL 61611

WMBD-TV
3131 N. University St.
Peoria, IL 61604

* WRAU-TV (Peoria, IL)
500 N. Stewart St.
Creve Coeur, IL 61611

* KHQA-TV
510 Main St.
Quincy, IL 62301

WGEM-TV
513 Hampshire
Box 769
Quincy, IL 62301

WIFR-TV
Box 239
Rockford, IL 61105

* WREX-TV
Auburn & Winnebago Rds.
Rockford, IL 61105

WTVO-TV
1917 N. Meridian Rd.
Rockford, IL 61105

WHBF-TV
231 18th St.
Rock Island, IL 61201

WICS-TV
Box 3920
Springfield, IL 62708

* Top-rated stations in their markets

Wisconsin

* WEAU-TV
Box 47
Eau Claire, WI 54701

WBAY-TV
115 S. Jefferson
Green Bay, WI 54301

* WFRV-TV
1181 E. Mason St.
Box 1128
Green Bay, WI 54305

WLUK-TV
Box 7711
Green Bay, WI 54303

WKBT-TV
141 S. 6th St.
La Crosse, WI 54601

WXOW-TV
Box 198
La Crosse, WI 54601

WISC-TV
4801 W. Beltline Hwy.
Madison, WI 53711

* WKOW-TV
Box 100
Madison, WI 53701

WMTV-TV
615 Forward Dr.
Madison, WI 53711

WISN-TV
Box 402
Milwaukee, WI 53201

* WITI-TV
9001 N. Green Bay Rd.
Milwaukee, WI 53209

WTMJ-TV
720 E. Capitol Dr.
Milwaukee, WI 53201

* WAEO-TV
Box 858
S. Oneida Ave.
Rhinelander, WI 54501

WAOW-TV
1908 Grand Ave.
Wausau, WI 54401

* WSAU-TV
1114 Grand Ave.
Wausau, WI 54401

Minnesota

* KCMT-TV
720 Hawthorne St.
Alexandria, MN 56308

KAAL-TV
Box 577
Austin, MN 55912

KBJR-TV
230 E. Superior St.
Duluth, MN 55802

* KDAL-TV
425 W. Superior St.
Duluth, MN 55802

WDIO-TV (Duluth, MN)
757 Third Ave
New York, NY 10017

WIRT-TV
Hibbing, MN 55746

* KEYC-TV
Box 128
Mankato, MN 56001

KSTP-TV
3415 University Ave.
St. Paul, MN 55114

WCCO-TV
50 S. 9th St.
Minneapolis, MN 55402

* WTCN-TV
441 Boone Ave. N.
Minneapolis, MN 55427

KTTC-TV
601 First Ave. S. W.
Rochester, MN 55901

* Top-rated stations in their markets

KMMT-TV (Walker, MN)
Box 550
Hackensack, MN 56452

WEST

Alaska

KENI-TV
Box 1160
Anchorage, AL 99510

KIMO-TV
3910 Seward Hwy 99503 or 3001 C St.
Anchorage, AL 99503

KTVA-TV
1007 West 32d Ave.
Anchorage, AL 99503

KFAR-TV
516 Second Ave.
Fairbanks, AL 99701

KTVF-TV
Box 950
Fairbanks, AL 99707

KONY-TV
1107 8th St. Suite 2
Juneau, AL 99801

KIFW-TV
Box 299
Sitka, AL 99835

Washington

KVOS-TV
1151 Ellis St.
Bellingham, WA 98225

KNDU-TV
3312 W. Kennewick Ave.
Kennewick, WA 99336

KING-TV
320 Aurora Ave. N.
Seattle, WA 98109

KIRO-TV
3rd & Broad
Seattle, WA 98121

* KOMO-TV
100 4th Ave.
Seattle, WA 98109

KHQ-TV
4202 S. Regal St.
Spokane, WA 99203

KREM-TV
4103 S. Regal St.
Spokane, WA 99203

* KXLY-TV
500 W. Boone Ave.
Spokane, WA 99201

KAPP-TV
35 S. First St.
Yakima, WA 98901

* KIMA-TV
Box 702
Yakima, WA 98907

KNDO-TV
1608 S. 24th Ave.
Yakima, WA 98902

Oregon

KTVZ-TV
62990 O. B. Riley Rd.
Box 149
Bend, OR 97701

KCBY-TV
Box 1156
Coos Bay, OR 97420

KEZI-TV
2225 Coburg Rd.
Eugene, OR 97401

* KVAL-TV
Box 1313
Eugene, OR 97401

* Top-rated stations in their markets

* KOTI-TV
239 Main St.
Klamath Falls, OR 97601

KOBI-TV
Box KM
Medford, OR 97501

KTVL-TV
Box 10
Medford, OR 97501

KATU-TV
2153 N. E. Sandy Blvd.
Portland, OR 97208

KGW-TV
1501 S. W. Jefferson St.
Portland, OR 97201

* KOIN-TV
140 S. W. Columbia St.
Portland, OR 97201

California

* KBAK-TV
Box 2929
Bakersfield, CA 93303

KERO-TV
Box 2367
Bakersfield, CA 93303

KPWR-TV
Box 1700
2831 Eye St.
Bakersfield, CA 93302

* KHSL-TV
Box 489
Chico, CA 95927

KECC-TV
Box 29
El Centro, CA 92243

* KIEM-TV
Box 3E
Eureka, CA 95501

KVIQ-TV
Box 1019
Eureka, CA 95501

* KFSN-TV
1777 G St.
Fresno, CA 93706

KNEO-TV
Box 5455
Fresno, CA 92755

KMJ-TV
Box 12907
Fresno, CA 93779

KABC-TV
4151 Prospect Ave.
Los Angeles, CA 90027

* KNBC-TV (Los Angeles, CA)
3000 W. Alameda Ave.
Burbank, CA 91523

KNXT-TV
6121 Sunset Blvd.
Los Angeles, CA 90028

KESQ-TV
Drawer 4200
Palm Springs, CA 92262

KMIR-TV
Box 1506
Palm Springs, CA 92263

KRCR-TV
Box 7R
Redding, CA 96001

* KCRA-TV
310 10th St.
Sacramento, CA 95814

KOVR-TV
1216 Arden Way
Sacramento, CA 95815

KXTV-TV
Box 10
Sacramento, CA 95801

KHST-TV (Salinas, CA)
Box 1938
Monterey, CA 93940

KSBW-TV
Box 1651
Salinas, CA 93902

* Top-rated stations in their markets

KCST-TV
8330 Engineer Rd.
San Diego, CA 92111

- * KFMB-TV
7677 Engineer Rd.
Box 80888
San Diego, CA 92138

KGTV-TV
Box 81047
San Diego, CA 92138

KGO-TV
277 Golden Gate Ave.
San Francisco, CA 94102

- * KPIX-TV
2655 Van Ness Ave.
San Francisco, CA 94109

KRON-TV
Box 3412
1001 Van Ness Ave.
San Francisco, CA 94119

KSBY-TV
Box 1368
San Luis Obispo, CA 93406

- * KEYT-TV
Drawer X
Santa Barbara, CA 93102

KCOY-TV
Box 1217
1503 N. McClelland
Santa Maria, CA 93456

Arizona

KOAI-TV
Box 1843
Flagstaff, AZ 86002

- * KOOL-TV
511 W. Adams
Phoenix, AZ 85003

KTAR-TV
Box 711
Phoenix, AZ 85001

KTVK-TV
3435 N. 16th St.
Phoenix, AZ 85010

KGUN-TV
Box 5707
Tucson, AZ 85703

KOLD-TV
115 W. Drachman St.
Tucson, AZ 85705

- * KVOA-TV
Box 5188
Tucson, AZ 85703

- * KYEL-TV
Box 592
Yuma, AZ 85364

* Top-rated stations in their markets

APPENDIX B
SEAFARING UNIONS

AFL-CIO Maritime Committee
100 Indiana Avenue, NW
Washington, D.C. 20001
Tel: 202 347-5980

Maritime Trades Department (AFL-CIO)
815-16th Street, NW Suite 510
Washington, D.C. 20006
Tel: 202 628-6300

Metal Trades Department (AFL-CIO)
815-16th Street, NW
Washington, D.C. 20006
Tel: 202 DI 7-7255

New York City Central Labor Council,
AFL-CIO
386 Park Avenue South, Rooms 601-607
New York, New York 10016
Tel: 212 MU 5-9552

American Pilots Association
1055 Thomas Jefferson St.
Washington, D.C. 20007
Tel: 202 331-9277

American Radio Association (AFL-CIO)
270 Madison Avenue
New York, New York 10016
Tel: 212 689-5754

Associated Maritime Officers
Division of MEBA 2
650 Fourth Avenue
Brooklyn, New York 11232
Tel: 212 965-6700

Brotherhood of Marine Officers-NMU
(AFL-CIO)
95 River Street, Room 207
Hoboken, New Jersey 07030
Tel: 201 659-2015

Communications Workers of America
Long Lines Unit
85 Worth Street
New York, New York 10013
Tel: 212 431-6827

Great Lakes and Rivers MMP District
Terminal Tower-Room 2420
540 Public Square
Cleveland, Ohio 44113
Tel: 216 241-0644

Great Lakes Seamen, Local 5000,
United Steel Workers of America
1221 Superior Building
815 Superior Avenue, NE
Cleveland, Ohio 44114
Tel: 216 241-7407

Inland Boatmen's Union
450 Harrison Street
San Francisco, California 94105

Inland Boatmen's Union of the Pacific
77 Marion Street Viaduct
Seattle, Washington 98104
Tel: 206 623-5117

International Union of Operating
Engineers
1125 17th Street, NW
Washington, D.C. 20036
Tel: 202 DI 7-8560

Licensed Tugmen's and Pilots'
Protective Association
Navy Pier
Chicago, Illinois 60611
Tel: 312 527-2828

Marine Cooks and Stewards Union
350 Fremont Street
San Francisco, California 94105
Tel: 415 397-5600

Marine Engineers Beneficial
Association, National (AFL-CIO)
17 Battery Place
New York, New York 10004
Tel: 212 425-7280

Marine Firemen's Union
240 Second Street
San Francisco, California 94105
Tel: 415 362-4592

Marine Staff Officers, Office and
Allied Personnel
450 Harrison Street
San Francisco, California 94105
Tel: 415 421-8603

Masters, Mates and Pilots of America,
International Organization of (AFL-CIO)
39 Broadway
New York, New York 10006
Tel: 212 944-8505

National Maritime Union of America (AFL-CIO)
346 W. 17th Street
New York, New York 10011
Tel: 212 924-3900

Radio Officers' Union of The
United Telegraph Workers Union (AFL-CIO)
225 West 34th Street - Room 1315
New York, New York 10001
Tel: 212 524-2791

Sailors' Union of the Pacific
450 Harrison Street
San Francisco, California 94105
Tel: 415 362-8363

Seafarers International Union of North
America (AFL-CIO)
675 Fourth Avenue
Brooklyn, New York 11232
Tel: 212 HY 9-6600

Staff Officers Association of America (AFL-CIO)
114 Liberty Street, Room 401
New York, New York 10006
Tel: 212 227-4377

United Marine Division-Local 333(AFL-CIO)
17 Battery Place
New York, New York 10004
Tel: 212 269-7151

American Tanker Officers' Association
555-5th Avenue
New York, New York 10017

Atlantic Maritime Officers' Association
Atlantic Maritime Employees' Union
260 S. Broad Street
Philadelphia, Pennsylvania 19102

Deepwater Officers' Association
17 State Street
New York, New York 10004

Jersey Standard Tanker Officers' Association
Esso Radio Officers' Association
Esso Seamen's Association
P. O. Box 1512
Houston, Texas 77001

Mobil Tanker Officers' Association
150 E. 42nd Street
New York, New York 10017

Sabine Independent Officers'
Association
Sabine Independent Seamen's
Association
Box 1500
Port Arthur, Texas 77641

Sun Marine Licensed Officers'
Association
Sun Marine Employees' Association
1608 Walnut Street
Philadelphia, Pennsylvania 19103

Texas Tanker Officers'
Association
Texas Radio Officers' Association
135 East 42nd Street
New York, New York 10017

Tidewater Tanker Officers'
Association
Tidewater Tankermen's
Association
17 Battery Place
New York, New York 10004

APPENDIX C

SEA GRANT PROGRAMS

NOAA MARINE ADVISORY SERVICE

Regional Organizations

NEMAS (New England Marine Advisory Service)

John K. Hutchinson
New England Marine Advisory Service
New England Center for Continuing Education
Administration Building
Durham, NH 03824
603/862-1970

PASGAP (Pacific Sea Grant Advisory Program)

Kenneth S. Hilderbrand
Coordinator, PASGAP
OSU Marine Science Center
Oregon State University
Marine Science Drive
Newport, OR 97365
503/867-4665

Harvey Moore
Executive Secretary, PASGAP
Extension Hall, Room 330
Oregon State University
Corvallis, OR 97331
503/754-4911

State Programs (* designates program contacts)

ALABAMA

R. Warren McCord
State Leader
Community Resources Development
Auburn University
101 Duncan Hall
Auburn, AL 36830
205/826-4932

ALASKA

John Ball
Marine Advisory Program
University of Alaska
3211 Providence Dr.
Anchorage, AK 99504
907/278-4911 or 907/276-0597

* John Doyle, Program Leader
Marine Advisory Program
University of Alaska
3211 Providence Dr.
Anchorage, AK 99504
907/278-4911

CALIFORNIA

*Maynard Commings
Coordinator
University of California Marine Advisory Program
Extension Wildlife and Sea Grant
554 Hutchison Hall
University of California
Davis, CA 95616

916/752-3342

Christopher M. Dwewws
Extension Marine Resources Specialist
University of California Marine Advisory Program
Extension Wildlife and Sea Grant
554 Hutchison Hall
University of California
Davis, CA 95616

916/752-1497

CONNECTICUT

*George S. Geer
Program Leader
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Marine Advisory Service
322 North Main Street
Wallingford, CT 06492

203/269-7788

Lance L. Stewart
Regional Marine Extension Specialist
University of Connecticut
Marine Advisory Service, Room 205
Avery Pt., Building 24
Groton, CT 06340

203/445-8664

DELEWARE

*Carolyn Thoroughgood
Director, Marine Advisory Service Programs
College of Marine Studies
University of Delaware
Newark, DE 19711

302/738-2842

FLORIDA

*Marion L. Clarke
Assistant Dean, M. Pros
and Coordinator
120 Newins/Ziegler Hall
University of Florida
Gainesville, Fla 32611

904/392-1837

GEORGIA

*David Harrington
Marine Extension Service
University of Georgia
P. O. Box 517
Brunswick, GA 31520

912/264-7268

LOUISIANA

*Ronald E. Becker
Assistant Director Sea Grant Program
Center for Wetland Resources
Coastal Studies Building
Louisiana State University
Baton Rouge, LA 70803

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Larry de la Bretonne
Assistant Specialist (Fisheries)
Louisiana Cooperative Extension Service
202 G Knapp Hall
Louisiana State University
Baton Rouge, LA 70803

504/388-2180

James F. Fowler
Associate Specialist in Wildlife
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Louisiana State University
Baton Rouge, LA 70803

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MAINE

*Ronald Dearborn, Director
UME Sea Grant Marine Advisory Service
Coburn Hall
University of Maine
Orono, ME 04473

207/581-2666

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Federal Building
Ellsworth, ME 04605

207/667-8212

Ken Honey
Director of Marine Extension
Department of Marine Research
Fisheries Research Station
McKown Point
Bouthbay Harbor, ME 04575

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*Elwyn E. Deal
Assistant Director
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1224 Symons Hall
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College Park, MD 21402

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Area Agent Marine Extension
Maryland Cooperative Extension Service
Extension Service Building
Prince Frederick, MD 20678

301/535-3662

Donald W. Webster
Area Agent Marine Extension
Maryland Cooperative Extension Service
UMCEES
P. O. Box 775
Cambridge, MD 21613

301/228-8200

MASSACHUSETTS

Arthur B. Clifton
Marine Liaison Officer
MIT Sea Grant Program, Rm. 1-211
Mass. Inst. of Tech.
77 Massachusetts Avenue
Cambridge, MA 02139

617/253-7135

*John Noyes
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University of Massachusetts
Stockbridge Hall
Amherst, MA 01002

413/545-0611

MICHIGAN

*Eugene F. Dice
Marine Advisory Service Program Leader
Room 136
Natural Resources Building
Michigan State University
East Lansing, MI 48824

517/353-5192

MINNESOTA

*Dale R. Baker, Director
MN Marine Advisory Service
109 Washburn Hall
University of Minnesota-Duluth
Duluth, MN 55812

218/726-8106

MISSISSIPPI

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Mississippi Cooperative Extension Service
Mississippi State University
Sea Grant Advisory Service
4646 W. Beach Boulevard
Suite 1-E
Biloxi, MS 39531

601/388-4710

NEW HAMPSHIRE

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Kingsbury Hall
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603/862-1889

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Durham, NH 03824

603/862-1889

NEW JERSEY

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New Brunswick, NJ 08903

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NEW YORK

*Bruce T. Wilkins
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Cornell University
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607/256-2162

NORTH CAROLINA

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Raleigh, NC 27607

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OREGON

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OSU Marine Science Center
Newport, OR 97365

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Edward R. Kolbe
Commercial Fisheries Engineering
OSU Marine Science Center
Newport, OR 97331

503/867-3011

RHODE ISLAND

*Walter J. Gray, Director
URI Marine Advisory Service
Narr Bay Campus
Narragansett, RI 02882

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Robert E. Taber
Commercial Fisheries Extension
Specialist
URI Marine Advisory Service
Narr Bay Campus
Narragansett, RI 02879

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SOUTH CAROLINA

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Beaufort, SC 29902

803/524-8469

TEXAS

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Texas A&M University
College Station, TX 77843

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Wallace Klussmann
Fisheries Project Leader
Texas Ag Extension Services
Texas A&M University
College Station, TX 77843

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VIRGINIA

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Gloucester Point, VA 23062

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Department of Fisheries and Wildlife
VA Poly Inst. & State University
Blacksburg, VA 24061

703/951-5059

Jon A. Lucy
Advisory Specialist
Department of Advisory Services
Vir. Institute of Marine Science
Gloucester Point, VA 23062

804/642-2111

WASHINGTON

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Lakewood Center, WA 98499

206/584-7611

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University of Washington
3716 Brooklyn Avenue NE
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Seattle, WA 98105

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1815 University Avenue
Madison, WI 53706

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